

AMERICAN Cinematographer

Magazine Of Motion Picture Photography And Production Techniques

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For further information write:

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AMERICAN

Cinematographer

INTERNATIONAL JOURNAL OF MOTION PICTURE PHOTOGRAPHY AND PRODUCTION TECHNIQUES

NOVEMBER, 1963

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FEATURES

Filming "Lilies of the Field"	640
Pseudo Ultra-slow Motion at 64 fps.	642
The Creative Film Editor	644
Follow-focus Technique	647
New System of Light Measurement for Exposure Control	650
Nine Guides To Good Narration	654
Motion Picture Lighting With Photoflood Lamps	658

DEPARTMENTS

What's New In Equipment, Accessories, Services	624
Industry News	630
Technical Questions & Answers	634
Behind The Camera	636
Product Reports	660

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WHAT'S NEW

IN EQUIPMENT, ACCESSORIES, SERVICES



Porta-Dolly

Gordon Enterprises, 5326 No. Cahuenga Blvd., North Hollywood, Calif., is exclusive western distributor of the Comarman-Kling Porta-Dolly. Equipment will support the heaviest studio camera, provides a boom range from a minimum of 12 1/2 inches from floor to maximum of 65 inches. Boom is raised or lowered by hydraulic pressure actuated either by hand or electric pump. Boom's rotary range is 360 degrees. Weighing 320 lbs., Porta-Dolly is small enough to be easily transported in a station wagon.



Nickod Power Belt

Cine-60 Motion Picture Equip. Co., 630 Ninth Ave., New York 36, N. Y., is marketing a compact Power Belt for supplying voltage for driving portable 16mm and 35mm cameras such as Arriflex, Auricon, etc. Composed of 12-cell one nickel cadmium batteries in a compartmentized leather belt, it is worn by the camera operator to provide full mobility to portable hand-held camera operation.

Power Belt for Arriflex 16 camera

provides 8.7 volts, is rated at 4 amp-hours, and lists for \$148.00. Power Belt for Arriflex 35mm camera provides 16.2 volts, is rated at 4 amp-hours, lists for \$225.00. Other sizes are available on special order.



Auricon Conversion

Photomart, 228 So. Franklin St., Temple 2, Florida, announces its new Rubykite Pro-400 Conversion for Auricon Cine-Voice and Pro-200 cameras. Complete conversion includes standard Bell & Howell 600-b. magazines, auxiliary torque motor take-up system, and electric footage counter. In this conversion, the camera body is not cut or altered in any way, thus permitting normal operation of camera with 100-foot film loads when desired. Price of conversion without magazine, is \$299.50.

Spectra Viewing Glasses

Photo Research Corp., 837 No. Cahuenga Blvd., Hollywood 38, Calif., is source of professional viewing glass films used by cinematographers to visually evaluate scenes prior to shooting. The Spectra Viewing Glasses are available for both color film and panchromatic film photography. The color viewing glass is a 2.0 density neutral viewing filter which shows shadow and highlight details as they will appear on color film and indicates excessive contrast when such present in

Continued On Page 236



The Auricon and Auricon are the most popular 16mm cameras made for professional production. They offer the finest quality of film and sound reproduction and the most reliable operation.

For details on Auricon cameras, contact the nearest Auricon distributor or write to Auricon, Inc., 2802 Kunitz Street, Hollywood 28, California. Auricon cameras are available in 16mm and 8mm. Auricon cameras are available in 16mm and 8mm. Auricon cameras are available in 16mm and 8mm. Auricon cameras are available in 16mm and 8mm.

All Auricon Cameras are sold with a 30-day money-back Guarantee and a one-year Service Guarantee. You must be satisfied!

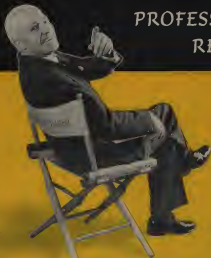
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- **Frazzelli Portable 115 Volt AC Power Supply**, designed to drive up to 5500 ft. of film. It utilizes a nickel cadmium battery and built-in recharger.
- **Celanese Quartz-King 1000 Lights**, produce more than 800 foot candles of smooth even illumination at 10 ft., with no hot spots or filament patterns.
- **Car-On Generator**, easily installed on any car or truck. It produces 110 volt AC, up to 30 amps, for lights, camera, tape recorders, etc.
- **Asiflex "Super 1200" 16mm Camera**, used for a wide variety of professional filming. It is a self-blimped, high fidelity, sound-on-film camera.

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WHAT'S NEW

Continued From Page 624

for some being viewed.

The Spectra viewing filter for panchromatic film use enables the photographer to visually evaluate the subject colors in grey-scale terms and also the scene's brightness levels. List price is \$7.50.



Blimp For Arri 16

S.O.S. Photo Cine-Optics, Inc., 602 West 52nd St., New York 19, N. Y., offers a new, lightweight blimp designed especially for Arriflex 16mm cameras. The S.O.S. Soundflex Blimp is made of tough laminated glass fiber, lined with rubber-board Nylon and fits the camera like a custom-made suit. Product is offered in two models with choice of three front sections.

Changing the fronts permits using lenses of different focal lengths. Other features include interior lights for illuminating tachometer, frame counter, magazine footage counter, focusing scale and the camera's interior. Due to its portability and lightweight—18 pounds with camera—it is ideal for use when shooting camera hand-held.

3-Wheel Tripod Dolly

Clark Engineering Co., 763 Terth Ave., New York 19, N. Y., offers a 3-wheel, collapsible tripod dolly designed for sound stage or location use. Features include 8-lb. heavy duty Durwell casters; steering T-handle for rear wheel which can be locked for straightforward rolling dolly shots; convenient platform space for both cameraman and assistant; sturdy screw clamps for securing tripod legs to dolly; and ability to travel through most doorways. Dolly folds into compact, easy-to-carry unit 10"x12"x36" in size.



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The Marlin Co.
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 Director — Fred & John Fogel

North American Aviation, Inc.
"QUICKEST DRAW IN THE WEST"
 Producer/Director — Cal Reed

The Upjohn Company
**"HYPNOSIS AS SOLE ANESTHESIA
 FOR CESARIAN SECTION"**
 Producer — Richard P. Truby
 Director — Donald Raymer

Continex Corp. of America
"SEVEN FIRE OIL CANS"
 Producer/Director — Ralph Eckerstrom

General Electric Co.
(Heavy Military Electronics Dept.)
"OR LIPSCHITZ FAIRY TALE"
 Producer/Director — J. H. Reese

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The Marlin Co.
"Nine Against One"
"OUR NEWEST CHALLENGER"
 Producer/Director — Douglas McKierny

Autonetics
"RINGS IN THE VELOCITE"
 Producer/Director — Jay Dresser

United Air Lines
"BEVERAGE SERVICE TIME"
 Producer/Director — Ira Thatcher

The Mitre Corp.
"THE LASER"
 Producer — Jack R. Smith
 Director — Paul C. Singer & Paul DeBello

Cineforas Division
(Bank Electric Co.)
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 Producer/Director — Charles O. Probst



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 permits any 3 frame
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 or optical interference
 with one another.



Available from plus
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 correct Arriflex 16 to 60
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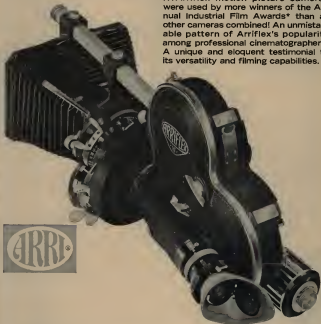
Range of magnification — 2 and
 3000 viewfinder system
 allows to estimate depth
 up to 1000 ft. magnification
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 one in six for viewing
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*ANNUAL INDUSTRIAL FILM AWARDS—conducted by the publishers of Industrial Photography magazine.

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INDUSTRY NEWS

News briefs of industry activities, products and progress

Film Production Up

Theoretical film production by Hollywood companies continues to show a steady trend upward. Mid-October saw 62 features shooting, which is close to the biggest number of films in production at any one time during the past five years. This time last year, U.S. production companies had only 23 features before the cameras. Both figures include films shot abroad as well as those shooting in the U.S.

Since January 1, 1968, 117 films have been put into production by U.S. companies compared to 111 for same period last year.

A similar upward trend also is in progress in the production of television films, with a total of 79 series presently before the cameras.

M-G-M Production Activity Sets New Record

Metro-Goldwyn-Mayer studios, last month, attained a new production peak with six feature films and eight television films before the cameras.

These include "The Unsinkable Molly Brown," with Daniel Fapp, ASC, directing the photography; "Night of the Iphigenia," with Gabriel Figueroa behind the camera; "Looking for Love," which Milton Krasner, ASC, is shooting in color in the Panavision process; "His and Hers," being photographed in color and Panavision by Harold Lipsstein, ASC; "Kismet" Co-star," being photographed by Ellis Carter, ASC; and "Sixpoint to Murder," with Paul Vogel, ASC, directing the photography.

The studio has scheduled more than 36 features for release during the next twelve months.

Film Producers Address Cinematographers

Producer Sy Bartlett and producer screenwriter Stewart Stern addressed members of the American Society of Cinematographers at the ASC's monthly dinner meeting October 23rd. Theme of both speakers pleased the same cause—irreverence in film mak-

ing. Stressing the importance of the cinematographer to a picture's success, Bartlett emphasized that the "indication of the cinematographer into the problems of a picture is necessary." He urged a reemphasis of effort in this direction especially in the pre-production planning of feature films.

Stewart Stern, a relative newcomer to Hollywood, who produced "The Ugly American," and now associated with Bartlett on "A Taste of Glory," deplored the fact that screenwriters and cinematographers are not encouraged to work in closer collaboration.

"Why must I be kept away from the cinematographer," he asked, "the man who can help me visually on what I am going to say?"

ASC President Hal Mohr presided and introduced the speakers.

Steudling and Sartain Filming "My Fair Lady" at Warner's

Two of the industry's top directors of photography are engaged in filming "My Fair Lady," one of the season's most important films now before the cameras at Warner Brothers studio in Burbank.

At the request of director George Cukor and first unit cinematographer Harry Steudling, ASC, Robert Sartain, ASC, will direct the second unit photography of the Assou Gossaye for the picture, which stars Audrey Hepburn and Rex Harrison.

Cinemas Not Dumping Tri-Film System

Although Stanley Kramer's "It's a Mad, Mad, Mad, Mad World" will be exhibited in the new single-lens Cinema system, which has proven eminently successful, Nicolas Reislin, Cinema's prey, last month scotched rumors that Cinemas hereafter will be a one-camera-film-projector system, supplanting the original three-camera-film-projector setup. Both systems have specific applications, it was pointed out, and Reislin cited George Stevens' "The Greatest Story Ever Told," filmed in three-panel Cinemas, as "another

Continued On Page 822

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INTERNEGATIVES • KODACHROME SCENE-TO-SCENE COLOR BALANCED PRINTING
• EKTACHROME DEVELOPING AND PRINTING • REGISTRATION PRINTING • PLUS
COMPLETE BLACK AND WHITE FACILITIES INCLUDING CUTTING ROOMS, FILM
AND TAPE VAULTS AND THE FINEST SCREENING FACILITIES IN THE EAST



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ColorTran's NEW 1000-watt BS-32 quartz-iodine lamp in the Quartz King 500 housing provides the widest, smoothest coverage ever achieved with quartz-iodine. NO BOOSTING REQUIRED.

- Rated life of 500 hours, never before available. Color temperature is constant. Does not dim or fade with age.
- Produces 75 footcandles at 20 feet, in a pattern 22 feet wide, 13 feet high, with an output that is virtually flat!
- Operates directly from 110/120 volts, AC or DC, producing 3200°K.
- Weighs only 21 oz. Internal fusing in lamp for protection of equipment.

The BS 32 lamp and Quartz King 500 housing (LQK 5/WYA) are available in all parts of the world through ColorTran distributors.

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Through ColorTran leadership, quartz lighting comes of age!



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INDUSTRY NEWS

Continued from Page 630

urally concerned and photographed for the original Cinema medium, in which it will be presented. "Mad World" was photographed in Passau.

"Brick" Marquard New ASC Member

C. F. "Brick" Marquard, last month was voted to Active Membership in the American Society of Cinematographers. Marquard, a veteran of 35 years in the motion picture industry, has photographed TV films for the past six years, including the "Challenge," "See Hani" and "Bat Masterson" series for Zo, and "Denovan's Reef" for Paramount. He is currently directing the photography of the "Lawbreaker" TV series for United Artists.

Paul Perry Passes

Paul P. Perry, veteran Hollywood cinematographer and a member of the American Society of Cinematographers since 1920, died October 24, following a brief hospitalization.

After he left Liverpool, where he

photographed one and two reel comedies. Perry joined Famous Players-Lasky studios in Hollywood where he remained for a number of years and photographed such stars as Mae Murray, Jack Pickford, Lila Lee and Wal lace Reid.

In 1955, he was honored by the ASC with a Gold Membership Card commemorating his 25 years of active membership in the society.

Camera Mart Conducts Film Editing Seminar

Some 600 film industry executives and employees attended the Camera Mart Film Editing Workshop Seminar in New York last month. Planned and programmed by Charles Lipow, Camera Mart's General Manager, the five day seminar opened on October 7th with a lengthy address by Mr. Arnold Eagle, of Arnold Eagle Productions, on subject of "Film Editing—The Essence of the Art."

A total of 45 speakers and guest lecturers participated and more than 100 industrial firms, government agencies, universities and military installations were represented by members of their film production personnel.



DISCUSSING FILM EDITING techniques at the 1959 Film-Editing Seminar in New York, which was held one session of Camera Mart's Film Editing Workshop-Seminar, are James Hall, Charles Lipow, Art Young, Earl Hayes, Arthur Bergman, Herman Lohf, and Joe Lerner.

The Seminar program started with screenings of two A.C.E. film's, "Basic Principles of Film Editing" and "Interpretation and Values." The last film illustrated how three different film editors would handle exactly the same original film material.

Bill King, Film Supervisor at CBS News made an important presentation. Concerning the role of the TV film editor, he said: "The challenge to a TV film editor in news or documentary film assignments can best be defined not as man who has the ability to edit and splice film footage in a period of

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- ... controls up to 1000 watts

MiniDyne 1000

A solid-state dimmer for control of all quartz-iodine and incandescent lights up to a total of 1000 watts, including Quartz-King, StarGas and studio lights.

- Absolutely smooth dimming control from 0 to full output.
- No DC feedback
- Three-wire safety grounded system. Overload and short-circuit protection built in
- All 3400°K and 3450°K lamps can be operated at 3200°K. Life of quartz-iodine lamps operated at 3200°K increased to approximately 100 hours
- Can be hung on any light stand. Convenient hand strap
- Measures 6 1/4 x 5 1/4 x 1 1/4". Weighs only 2 3/4 lbs.



Model CMO-10

MiniDyne 650-watt Electronic Dimmer Model CMO-6
Provides smooth, continuous control of quartz-iodine and incandescent lights up to a total of 650 watts. All the features of the MiniDyne 1000 with true economy. Weighs only 28 ozs.



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DETAILED LITERATURE



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BURBANK, CALIFORNIA

time considered unreasonable."

To prove his point, Kling presented a special demonstration. The complete news film footage of a recent bombing incident, which took place in the city of Saigon, was projected before the Seminar audience. It was the first



SEMINAR PARTICIPANTS suffer second Audience Special Optical Film Release treated by additional pictures on film setting, before the left and demonstration on "Taking the Second Track."

time that Mr. Kling had seen any of the footage and he watched the many film takes with intense concentration, mentally editing the film as he viewed it on the screen. The projected footage was then brought to the stage. At one of the editing tables provided, Kling proceeded to cut the film footage into a news spot. As he continued the editing task, he fed the chosen film footage to his assistant, David McGraden (also of CBS News), who was seated at an editing table adjacent to Kling's. Within six minutes the edited and spliced footage was back in the projection room and screened again. The entire procedure was covered by a closed-circuit TV camera, which showed those in the audience all the close-up detail of the rapid actions performed at the editing tables.

Practical demonstrations, such as Bill Kling's, were given by several other industry technical men. Unfortunately limited space precludes describing them in detail here.

Special workshop panels were conducted Thursday and Friday evenings, October 10th and 11th. Seminar participants had been invited to bring with

them problem films—either in finished or workprint stage—for analysis by the panel of experts.

The Seminar, first an motion picture film editing ever conducted for the industry in the east, was declared by those attending a most helpful adjunct to their work. The Camera Man, which sponsored the project, plans to make the Seminar an annual event, according to Samuel Hymas, company president.

Telescope Conversions

Mitchell and Arriflex 35mm cameras may now be converted to the two-perforation Techniscope process. Mitchell Camera Corp., Glendale, Calif., announced the new modification service last month. Cost for converting a Mitchell is approximately \$1,400; for the 35mm Arriflex, about \$1,800.

Saul Jeffee Re-elected Lab Association Proxy

Saul Jeffee, president of Novriah, Inc., New York, has been re-elected president of the Association of Camera Laboratories.

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Q & A

Technical Questions and Answers

Q.—For a 16mm training in color depicting the growth of a city, I wish to produce a scene of a cottonfield over which several modern buildings are to pop up to depict cottonfield's gradual transformation into a modern city. How can I superpose the buildings over the cottonfield scene? —MST, Los Angeles

A.—A major studio, with special effects department, would easily achieve the effect described through traveling matte process. Special effects laboratories such as Film Effects of Hollywood and Ray Mercer & Company, Hollywood, are equipped to service the independent film maker with all types of special effects, including traveling mattes. It's a somewhat costly process, however, and if your needs are not for the strictly professional effect, you can achieve a reasonable cut yourself.

The simplest method, perhaps, is to employ still photographs in color—use of the cottonfield, and others of the buildings you wish to superpose. Arrange the cottonfield scene on a board before your camera, match the same as you would in shooting a title card. Shoot enough footage of this scene to introduce it on the screen, then stop the camera.

At this point place a photo cutout of the building you wish to introduce in the scene over the cottonfield photo, fixing it securely in place, then resume photography. Continue this procedure until all buildings you wish included have thus been superimposed.

If you insist on a live-action cottonfield scene for the background—one in which grass, plants, etc., may be seen moving with the wind—you must follow a more intricate set-up. This entails first shooting the cottonfield scene in 16mm color, then projecting it on a transparent screen from the rear and placing the photo cutouts of the buildings over the projected image at the front. Because this will require front lighting in order to show detail of the photo cutouts, it will be necessary to use a strong light source in the projector back of the screen which projects the cottonfield scene.

Also important is the need to be able to synchronize your camera with the projector so that the shutters of both open and close simultaneously and in sync.

Q.—Is it possible to remove a mag. wire sound stripe from 16mm film? How can I do this?—H. E. H. Nixon, N. J.

A.—According to the Vitatone Company, Los Angeles, whose business is putting sound stripes on film, there are three chemicals which may be used to remove magnetic sound stripes—either liquid or laminated. Trichloroethylene, they say, is probably the best of the three. The others are benzal and laquer thinner. All three should be used with great care in a well-ventilated room to avoid any possible toxic effects.

Q.—I am about to start production on a dramatic film for theatrical release which will be played mainly in theaters. I have considered shooting the production in 16mm and have been told that a new film has been developed for 16mm cameras which is of such quality as to produce good 35mm prints. This film is said to be quite close. Can you supply any information on it?—A. W., Chicago, Ill.

A.—We are not familiar with the film you describe. Although there are many excellent 16mm film stocks presently available, it just isn't possible to produce 35mm blowups from any 16mm film. Black-and-white or color, and get screen quality identical with that produced from 35mm camera negatives.

This is because the magnification on the screen with 16mm film is much greater than 35mm and quality suffers accordingly. Despite this, however, it is possible to produce good 35mm blowups from 16mm camera film which is acceptable for theatrical release.

Walt Disney studios, to cite one example, has for years employed the 16mm blowup process in the production of many of its live action short subjects in color. Much if not all of the material is shot by professional 16mm cinematographers. The camera films are given special attention to Disney's own laboratories and ultimately the final 35mm release prints are made by Technicolor.

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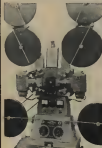


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BEHIND THE CAMERAS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH
EXPRESSION PICTURES

NOTE: Available following date unless otherwise listed producer.

ALSO ARTISTS

JACK MARSHALL, "The Stranger" (Richard Diamond Prod.) with Victor Borge and Dana Sayer. David Diamond, director.

STANLEY CRISTAL, ASC, "The Iron Kid" (Lena Frankel) with CONSTANCE TOWEN. Stewart Fuller, producer/director.

AMERICAN INTERNATIONAL

FLOYD CRISBY, ASC, "The Comedy of Errors" (J. H. Nicholson S. Z. Arnold Prod.) (Venus) with Victoria Frier and Peter Lucci. Anthony Carter, director.

GEOGRAPH STUDIOS—New York

JOHN S. FREESTLY, "East Side, West Side"

CASCADE STUDIOS

RAYMOND BELMONT, ASC, Commercial

CELIA WHEELER, Commercial

CBS—N.Y.

CHARLES MARK, LEO ROSS, ROBERT CLEMENS, "CBS Reports"

MIKE ZONKAL, ERIC NEUMAN, "Casual Camera"

GEORGE JACKSON, BERNARD DRENNEN, JIM PRUITT, "Twentieth Century"

COLUMBIA STUDIOS

OSWALD MOORE, "The Pumpkin Eater" (Rexnall Prod., shooting in England) with ARNO BLOCH and Peter Finch. Jack Cardiff, director.

GARY ANGLER, ASC, "Dennis Reed Show"

FRANK PARKER, "Kissin' Your Way Back Home" (Herman-Budich Prods., Jersey or soon, color) William Janss, producer/director.

WALTER LARSHALL, "Psyche 59" (Top-Schneak International Prod., shooting in England) with Curt Jurgens and Patricia Neal. Alexander Singer, director.

ROBERT WILCOY, "Grand"

JEAN BEAUL, "Rebald a Pale Horse" (Ferd Zandbergen Prod., shooting in France) with Gregory Peck and Anthony Quinn. Ferd Zandbergen, producer/director.

RICHARD CRISBY, ASC, "Good Neighbor Sam" (David Swift Prod., color) with Jack Lemmon and Betsy Schwartz. David Swift, producer/director.

WALTER CRISBY, "Fury Men On the Move" (Clay H. Schenck Prod., Powers Dynamometer) Truitt, shooting in England) with Edward G. Robinson and Martha Raye. Nathan Jurak, director.

ROYCE ARKIN, "Kings"

IRVING LIPMAN, "Road 66"

LEON ARON, ASC, "Father's Daughters"

FRED GARBY, ASC, "Hud"

DELU—Chicago

ROBERT DEGRASSE, ASC, "Daddy Thomas Show", "Dick Van Dyke Show"

HENRY GARDNER, "The Joey Bishop Show", "The Bill Bixler Show"

FRANK GARDIN, "My Favorite Martini"

SIX HENRI, ASC, "Andy Goff's Show"

DETROIT—Color City

GLEN MACWILLIAMS, ASC, "Globe"

CHARLES STRAUSS, ASC, "The Greatest Show on Earth"

DETROIT—Green

THE VOYAGINER, ASC, "Ben Casey"

EDDY VONLANER, ASC, "My Three Sons"

ROBERT HANCOX, ASC, "The Breaking Point"

EDWARD FINEBERG, ASC, "Lenny"

MARIN GREENGLASS, ASC, "The Lenny Show"

FILMWAYS STUDIOS—New York

MORRIS HARTMANN, ASC, "The Defenders"

GENERAL SERVICE STUDIOS

ROBERT MORRIS, "Adventures of Ozzie & Harriet"

ARNDIE DALLIEL, "Be. Ed."

MARY WOLF, ASC, "The Beverly Hills Inn", "Pollock Junction"

GOLDWYN STUDIOS

JOSEPH BARRY, ASC, "The Young Lovers" (Tippett Prod.) with Peter Fonda and Sharon Goffey. Stewart Goldwyn, Jr., producer/director.

FRED MARL, ASC, "The Fugitive"

INDEPENDENT

JEAN TOUSSAINT, "The Trees" (Widescreen) shooting in France) with Burt Lancaster and Jeanne Moreau. Arthur Poon, director.

ANDREW LARLEY, "One Potato, Two Potatoes" (Berman Pictures, Inc., shooting in Ohio) with Rollins Tamm and Bonnie Henderson. LARRY FENNER, director.

LIGHTFOOT BERRY, ASC, "The Long Corridor" (Lena Frankel Prod.) Special Effects.

LIGHTFOOT BERRY, ASC, JAMES COMPTON, ASC, "It's a Mad, Mad, Mad, Mad, World" (Stanley Kubrick U.A.) Special Effects.

ANTHONY ARNONE, ASC, "The Dabbling Peacock" (Cortelless Prod.; UA, P'Film); shooting in Yugoslavia) with Stewart Gardner and Raf Vallone. Roger Corman, director.

JOE MACDONALD, ASC, "Invitation to a Gunfight" (Stanley Kubrick Prods. UA, Release, P'Film & Eastman color) with Yul Brynner and Janice Rule. Richard Wilson, director.

HAROLD WHEELER, "The Best Man" (Millan-Tamm Prod., UA release) with Henry Fonda and Cliff Robertson. Franklin Schaffner, director.

HYMAN MILLER, Jr., "Back Lick 36" (Diana Jennings Inc.; shooting in MA.) Carl Lerner, director.

Continued On Page 628

FILMS OF WORLD FAME, SERVICED BY THE MOLE-RICHARDSON EUROPEAN ORGANIZATION



"The Cardinal"
Olivier Tranchesi
Gaumont Production

"The Fall of the
Roman Empire"
Samuel Bronston

"Lawrence of
Arabia"
Columbia - Horizon

"35 Days in Peking"
Samuel Bronston

"Cleopatra"
Twentieth
Century Fox

"Capeargue
Rift"
M.G.M. Production

"The Great
Escape"
Mirisch Production

"The Longest Day"
Twentieth
Century Fox

"The War"
M.G.M. Production

"Zandor"
Columbia Alpha S.A.
Olivier Tranchesi

"The New Story"
Warner Brothers

"The
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Columbia

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BEHIND THE CAMERAS

Continued from Page 638

CHARLES ADYEN, ASC, "Thousand 200" (Columbia Prod., shooting in color for NY World's Fair).

ALAN PHILLIPS, Jr., "The Fool Killer" (Lionel Co., shooting on set coast) with Anthony Perkins and Edward Albert. Servadio Gonzalez, director.

BORIS KATYUSH, ASC, "The Frenchman" (Lindsay Co., shooting in N.Y.) with Bud Stryker and Geraldine Fitzgerald. Sidney Lumet, director.

MARIO DE LEO, "Tomb of the Living" (MCA Int'l Pictures, shooting in Rio de Janeiro) with Bruce Cabot and Fay Spain. Massimo G. Altieri, producer-director.

FLOYD CRANE, ASC, "Zoo Habitat" (Nash Pictures, shooting in Tel Aviv, Israel) Moshe Golan, director.

ALBERTO FRALDI, "Bonnie" (Bravo-Capricorn Prod., shooting in Madrid) with Ty Hardy and Popeye Musto. Richard C. Meyer, director.

ITVAN BELLEBRAND, "Mille Goni to Budapest and Who is Miko?" (Columbia-Hemdale, shooting in Hungary) with George Sanders and Buddy Hackett. Richard Thorpe, director.

ANDREA LANTINI, "The Wild Affair" (Seven Arts Films (JEK) Prod., shooting in Los Angeles) with Nancy Kwan and Terry Thomas. Frank Ernst, director.

GAYNE BURGESS, ASC, "The Dr. Wood Story" (First Arts Prod.; shooting in N.Y.) with Mark O'Mara and Anne Hathaway. William Martin, producer-director.

JACK BLOOMER, CLAUDE BENTON, "Clifford Smith" (RCA) BLOOMER Prod.; PARAMOUNT (Lionel), Super Techniscope-35 & Techniscope in Spain) with John Wayne and Claudia Cardinale. Henry Hathaway, director.

WILLIAM ZIMMONS, "Tell Me in the Sunlight" (Paramount Films, shooting in the Bahamas & Mexico) Steve Carls, director.

FRED HOFFMAN, BERNARD DOLAN, "1963 World Series" (New York).

MARCEL BERNINGER, ASC, "The Thin Red Line" (Security Pictures, shooting in Spain) with Kay Dallas and Jack Warden. Andrew Martin, director.

HANS KROHSMAYR, ASC, Commercial.

MERRILL LINDNER, Industrial Films.

LOYD EITNER, Industrial Films.

ROY SEARNS, Commercial.

LA BREA STUDIOS

ROBERT HARRIS, "Pony Man" *

LONG ISLAND STUDIOS, N.Y.

ARTHUR GENTILE, ASC, "The World of Harry Orlan" (Par-Arte Prod., with Peter Sellers and Angela Lansbury. George Roy Hill, director.

M-M-M STUDIO

EMMETT BERGHEZ, "Combat" *

DALE DUNNAN, ASC, "The Edward Show" *

WILLIAM SWANBERG, ASC, "The Richard Boone Show" *

HAROLD SMITH, ASC, "Dr. Kildare" *

EMMETT BERGHEZ, "Combat" *

RAY FLEM, "The Tapes of James McPherson" *

DICK KLING, "Mr. Nowak" *

FRED KROHSMAYR, "The Lieutenant" *

MELVIN KRANICK, ASC, "Looking for Love" (Keston Productions, Pictures, Metroland) with George Fennell and Jon Harris. Don Wau, director.

FRED LAMBERT, ASC, "The World's Greatest Showmen" *

DANIEL FAPP, ASC, "The Unshakable Nelly Ryan" (Levyson Whigmore Prod. P. Weiss and Metroland) with Collier Reynolds and Harvey Pressell. Chuck Walters, director.

GABRIEL FRIEDSON, "Night of the Ignorant" (Seven Arts John Huston-Ray Stark Prod., shooting in Mexico) with Richard Boone and Ava Gardner. John Huston, director.

ROBERT BRONSTEIN, ASC, "His and His" (Warner S. Bertram Prod., Pictures) Metrocolor) with Robert Conley and Nancy Kwan. Henry Levin, director.

ELIAS CARTER, ASC, "Kinky Cookies" (First Lead Prod., Pictures, Metroland) with Elya Pinsky and Patricia Austin. Gene Nelson, director.

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PARAMOUNT STUDIOS

WILLIAM WHITELY, ASC, Market Began, ASC, "Bonanza" *

PAINE STUDIOS, N.Y.

ANDREW LAMDA, LYONS BROSCH, ASC, "The Navy" *

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GEORGE DURANT, ASC, CHARLES BUNAG, ASC, "Barb's Law" *

FRANK PHILLIPS, ASC, "Gambler" *

SHENCA STUDIOS, N.Y.

HOWARD BUCK, "Black and Meyer for Hire" *

SHORO CENTER

JOHN NICHOLAS, CONRAD HALL, "The Dark Knight" *

JACK SWAIN, "Rawhide" *

NEAL BECKNER, "The Great Adventure" *

TWENTIETH CENTURY-FOX

SAH LEVITTE, ASC, "Shock Treatment" (Archie Prod.) with Stuart Whitman and Carol Lynley. Don Soderber, director.

LEON SWANBERG, ASC, "What a Way to Go" (Apex-Mahle, C-Scope, DeLuxe, Color) with Shirley MacLaine and Paul Newman. J. Lee Thompson, director.

JAMES VAN TRIGG, ASC, "The Phil Spector Show" *

UNITED ARTISTS-TV

BUCK MARSHALL, ASC, "Law Breaker" *

Continued On Page 674



SHOOTING SCENE on set of partially constructed chapel. Actor in raised area on left and actor Sally Potter, walking past camera

Director of Photography Ernest Haller checks left of camera checking exposure for opening shot

Filming "Lilies of the Field"

Ernest Haller photographed the entire production, both interiors and exteriors, on location in Arizona.

By HERB A. LIGHTMAN

ERNEST HALLER, ASC, a veteran of 47 years as a Hollywood cameraman, covered himself with glory when, in 1938, he directed the photography of the highest-grossing film ever made, "Gone With The Wind." For that superlative effort he received an Academy Award and world-wide acclaim. Now, a quarter of a century later, he bids fair to repeat his triumph as director of photography of "Lilies of the Field," a film as unlike "GWTW" as anyone can imagine.

Whereas the Civil War film was made on an epic scale, cost more than any film up to that time, ran almost four hours in length and took six months of uninterrupted filming to complete—"Lilies" was photographed in simple black-and-white in the standard aspect ratio; it has no spectacle whatsoever, no star names except Sidney Poitier, in the lead, and was shot entirely on location in the Tucson, Arizona, area without a single scene being filmed on a sound stage. Its total budget would finance

perhaps a minute or two of an epic such as "Cleopatra." Most impressive of all, however, is the fact that while planned to be filmed on a 21-day shooting schedule, production went so smoothly that the entire shooting was completed in thirteen days.

The basic story, though off-beat, is simplicity itself. It details the adventures of a Negro ex-GI touring the Southwest in his second-hand station wagon. Along the way he encounters a group of women clumsily attempting to repair a chicken coop fence. He stops to help them, stays to work briefly as a hired hand (he never does get paid), learns that the women are all East German nuns recently arrived to claim the barren farm recently inherited by their order.

They speak English no better than they mend fences and they subsist largely on the output of several overworked chickens and one tired cow. Poitier, as Homer Smith, tarries long enough to mend their

leaky roof, rebels against the stern disciplinarian Mother Superior, yet cannot tear himself away, although he is not a Catholic.

He tails on a road-building gang in order to buy food for the nuns' table, and almost despite himself builds a chapel for them of adobe, glass and wood on the edge of the desert—then leaves as suddenly as he arrived.

The picture was filmed largely on an abandoned farm outside Tucson in semi-desert country that could hardly be called pictorial. The film's most ambitious "prop" is the charming chapel built on the site of an abandoned stable. Since the story's action is geared to the progress of the chapel in various stages of construction, workmen labored all night to keep pace with the filming. These same workmen make their acting debuts before the camera as neighbors who come to donate their labor to the cause. Once completed, the chapel could have stood for decades—but since the film was built on rented land, it had to be dismantled after filming was completed.

Haller was fortunate in having with him a fine crew of technicians who had worked with him before. Fred Jackson, Jr., was camera operator, Dick Glewener was assistant cameraman and Norman McClay, who had worked with Haller on a number of pictures, was gaffer.

The company brought along a generator and a complement of large studio lighting units, including "Brace" sun-arc, plus Seneca, Junior and Baby spots. These were used mainly to illuminate large areas for night exteriors. They were also used for day exteriors when overcast weather, producing an over-all flat light, made it necessary to create key-light modeling by artificial means.

The interiors, all photographed inside actual buildings on location, were lighted almost entirely with Garmelites—small portable sealed-beam units operating off house current, and which can be boosted to the intensity of studio lights by means of small transformers. The sealed-beam lamps used in this equipment were originally developed as 300 watt lamps for lighting airport runways and throw a horizontal beam similar to that of automobile headlights. When they became accepted for photographic use the manufacturer increased the intensity to 500 watts, and they are now available in spot globes, medium floods and wide-angle floods.

Haller first started using this type of portable lighting equipment in 1951, when he left Warner

Continued On Page 562



LENDING UP a shot for "Lion of the Field" Setting the Mitchell BNC camera for the angle is Frank Haller, while Director and Producer of the picture, Ralph Hutton (lower left), goes orders out of scene, last minute instructions. Others in photo are unidentified.

SCENE FROM "Lion of the Field" Sidney Poitier, as an GI Homer Smith, uses phonograph records to teach English to the five refugees whom he accompanies living in the Arizona desert.





HUMMINGBIRD appears to be hovering in mid-air in this well-photographed shot, filmed at normal speed. Shot was achieved by backlighting supplied by No. 2 photoflood lamp in a reflector.



WINGS IN MOTION—When ready to leave nest baby "hummers" are capable of wing beat approaching 80 per cent that of adult bird.

Pseudo Ultra-slow Motion At 64 fps

Exposures of 1/13,000-second obtained with a Bolex H-16 camera with modified shutter produce unusual ultra-slow-motion movies of hummingbird wing action.

By TULLIO PELLEGRINI, AFSA

TO ANYONE FAMILIAR with the fast wing-beat of a hummingbird in flight, the photos above and on the adjoining page may give the impression that they were photographed with a high-speed motion picture camera with an exposure capability of around 3,000 frames per second. Actually, the pictures are frame enlargements from a 16mm color film photographed with a Bolex 16mm camera at 64 frames per second. How the effect of ultra-slow motion photography was accomplished at this camera speed and how the shot of the wing action of a "hummer" as it flies backwards (pictured on adjoining page) was made will be described in detail here.

This particular flight sequence, part of an educational film deal-

ing with the life and behavior of one specie of hummingbird, was not intended to be a study of its flight action. This is a subject that deserves to be treated separately because of its unusual nature and the painstaking photography it involves. Nevertheless, having anticipated some general interest in the "hummer's" flight secrets, and also spurred by our own curiosity, the decision was made to include one sequence on this subject in this film, which has been titled "Life Cycle of the Hummingbird."

The problems posed, even before filming of this sequence began, were as formidable and numerous as those that were to be encountered in filming a subject as minute, swift and elusive as the hummingbird; in planning the

photography of the flight sequence, the main concern was time. The time referred to here concerns the interval of exposure as it relates to the speed of a hummingbird's wing in flight, and the fact that if a high-speed camera capable of exposures of 3,000 fps was to be used, one-second of the bird's action would be recorded on film that would require about two-minutes to project at 24 fps. It was decided that if two minutes of screening time were to be devoted to the subject, it should include several cuts or shots of the bird made from a variety of angles—affording opportunity to see the bird floating gracefully above a blossom while extracting nectar from it, etc., and at the same time—and this was very important—afford observation of its

wing action clearly with a minimum of blur, in a real slow motion manner.

To accomplish this with a 16mm camera may sound impossible, but the technique that was used to achieve the results shown here is something that is known to most movie makers. In essence it involves no more or less the stroboscopic effect often observed in a motion picture scene having a wagon or carriage moving through it, with the spokes of wheels appearing to move progressively backwards as the vehicle moves swiftly forward. Because the speed of the wheel was not the same as the frames-per-second speed of the camera that photographed it, the spokes of the wheel appeared to move backward, standing still, or moving forward. This phenomenon is known as stroboscopic effect.

To explain how this effect can work to one's advantage in photographing a subject such as a fast-moving hummingbird, let us assume that a hummingbird, hov-

ering in approximately the same spot, beats its wings 24 times every second, and this action is photographed at 24 frames per second. With wing-action and camera thus synchronized at the same speed, it is obvious that each frame of film will appear to be practically the same. Should the "hummer" increase its wing beat to 25 per second, each successive frame of film will show the wing movement slightly ahead of the preceding one (see sequence illustrated). Should the wing-beat be reduced, say, to 23 per second, the action on the screen will appear slightly retarded.

In other words, when this off-synch footage is projected at 24 fps, the part in which the bird was photographed one wing-beat per second ahead of the camera speed (24 fps), each second of projection time will show only one complete wing beat forward. The footage in which the bird's wing beat was only 23 per second will, when projected at 24 fps, appear to go backward at the rate of one complete cycle per second. Thus it may be seen that the rate in which such action can be made to appear moving faster or slower than when photographed is dependent upon the difference in the speed between the fps speed of the camera and the wing beat of the hummingbird for a given period of time.

With a full understanding of the stroboscopic effect and what could be achieved with it in photographing a subject of this kind, there were three other factors which were important to the success of this photographic undertaking. First, it was necessary to know how many strokes per second there were in the wing action of the hummingbird to be filmed. Second, how could the bird be induced to perform before the camera at a place and time best suited to good photography. And third, how to achieve the fastest possible exposure of wing beat movement, using 16mm color film.

Continued On Page 444



WHEN A HUMMER flies backward, its wings are tilted to provide the necessary lift, as revealed in slow motion sequence shown. Each frame represents a view at 1/2000th of a complete wing beat, photographed at 1/12,000-sec.

AUTHOR FEURBERG modified the shutter of his Bolex 16mm camera to give exposures of 1/12,000 second at 24 fps camera speed. This involved making two bellows and mounting them on the shutter opening and adjusting meters, as shown in diagrams below. Shutter openings for producing exposures ranging from 1/8,000-sec. to 1/120-sec. are also indicated.



THE CREATIVE FILM EDITOR

If he is properly observant, the creative film editor will see many opportunities to add something to a film. Imagination and a sense of showmanship are invaluable assets.

MOST OF THE film editor's work is not done at the *Moviola*. The actual cutting done at the bench is the result of a cooperative effort between the editor and all the other people with whom the editor works. True, there are techniques involved—some of them rather complex—in the actual handling of film, and the editor must know these techniques thoroughly in order to be able to translate decisions into good films.

But these techniques can be compared to those of the mechanic, carpenter and mason, as well as of the painter, sculptor, or musician. They are merely the extensions of the tools with which one works, and are therefore mechanical rather than creative in nature. These techniques can be learned in textbooks or from experience. I know of no editor who has handled film for an appreciable length of time who doesn't know most of the tricks

BY LEON BARSHA

Past President, American Cinema Editors

of the trade, and yet all editors are not creative. Some, in fact, never get out of the mechanical stage.

What is it then that makes an editor creative? Is it possible for anyone to achieve this state? Within certain obvious limitations, and with one possible exception, I believe all editors can make it. The one exception which must be allowed is a feeling for "showmanship."

What makes Jack Benny know precisely how long to hold his classic blink expression for an audience? What made C. B. DeMille grasp those themes which he knew would be highly acceptable to the audience? What makes Paul Arka a teenage idol? It is not just a simple case of ability in an in-

dividual field. There have been better actors than Benny, better directors than DeMille, better singers than Arka. Some day we may be able to describe this rare capacity for "showmanship" but at this point can only treat it as an instinct and allow that some have it and others do not. Anybody in the entertainment field—and this certainly includes film editors—must have that innate feeling for audiences and know how to put it to use.

Granted the essential and indefinable quality of "showmanship," what other requirements belong in the creative editor's background? Of course, this background need not be acquired in a formal education, but as I look over treaties on requirements for creative masters of film, the phrase "knowledge of" is constantly used. One must have at his fingertips a knowledge of the classics, for, after all, the editor's work is based on variations of the classic plots and plot devices. It is also necessary to have an understanding of contemporary literature and drama. These are, first and foremost, a part of the editor's makeup.

But still greater knowledge is needed. Because he works in a visual medium, the editor must know and appreciate the plastic arts. To be able to feel form, color, and composition will help him to automatically select the best scenes in terms of their visual content. Finally, he requires an awareness in the humanities. Philosophy, sociology, psychology and ethics are all part of our lives, and the editor must have a feeling for life.

The editor, then, must learn to observe what is around him and translate this observation into his own peculiar language. The writer does it with words, the photographer does it with light and composition, and the editor

Continued



FILM EDITOR Peter Herman runs an edited sequence through the *Moviola*, studying the visual effect on the audience viewing screen. It is here that the imaginative film editor enjoys the greatest opportunity to create.

The above article by Mr. Barsha is reprinted with permission from the *Waste*, 1963, issue of Television Quarterly, the journal of the National Academy of Television Arts and Sciences.—ED.

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done it with film. It is precisely here that he enjoys the greatest opportunity to create. He sees the film more often and more closely than anyone else, and consequently sees many things that are not obvious in routine projection. Sooner or later every frame of a film will become familiar to him and him alone. If he is properly observant, he will see many opportunities to add something to a film—a new facet of drama, a different way to play a scene for better effect, a new piece of business—perhaps even a completely new approach.

A classic example of what an editor's contribution can do is found in a recent film which, during the editing stage, was admitted by everyone concerned to be pointless and dull. At the editor's suggestion, a number of clock insects were made several times in the course of action in order to build dramatic effect by playing the suspense against time. The idea was almost too simple, yet, the picture turned out to be an award winner, a "classic example of cinematic technique."

Imagination, then, is an invaluable asset to the creative editor. He must be able to imagine, from the script, what the photographic scenes will be. With this vision he can, if necessary, suggest improvements in the script. On the stage he must be able to visualize the filmed impression which will result from the live action, and then coordinate in his mind the eventual juxtaposition of all the angles being taken. This may lead to suggestions for eliminating certain proposed angles, or it might suggest additional approaches in shooting. And once in the projection room, or at the editing bench, his imagination should lead away from "in-the-groove" thinking.

The creative editor must also learn to communicate with his fellow creators. He is in direct contact with three people important to a film: writer, director, and producer. His ability to explain his ideas to these people is important if these ideas are to be realized in production. At the same time he must be able to listen—to understand what others are trying to say in a film so he can later translate—give these thoughts their translation. Frequently the creative editor can often counsel and guide the work. Certainly the director and editor must be in constant communication—they must speak the same language. And since the editor is usually the producer's

Editor's note: Leon Barish is the immediate past president of ACE and as a veteran Hollywood film editor has to his credit such other major responsibilities as montage director, special effects director, supervising editor, associate producer and director.

representative, he must know his needs and problems, too, and be able to convey them to all others concerned with the editorial phase, for, as a matter of fact, the editor is very often forced to mediate the misunderstandings between other creators.

But, above all, the creative editor must develop a sense of curiosity—and with it a passion for experimentation; for one of the unique qualities of the motion picture is that element of experiment which can be introduced between the preliminary conception and the final screening, and it is within the scope of the editor to help determine how much or little experimenting will be done. All too often the mechanically-minded editor puts a film together according to all the so-called rules and feels that he has done his part. If he is to be truly creative, he must be possessed of that desire to try something another way, to seek out a new approach.

Yet, with all of this, the editor must guard against one dangerous attitude. During his close association with each

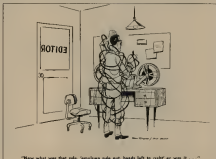
film, sometimes for as long as two years or more, he faces the possibility of losing his perspective and objectivity. Films are still made to be viewed—and not once, at least a very few times. Those who are so closely concerned with the making of a film must maintain the sense of distance as they work along on it, and must not read into the film those characteristics which might only be seen by one who has had a long association with it. This is difficult to learn, but is of utmost importance.

Remembering all of this, the editor can then sit at his Moviola and with just one more attribute—ingenuity—add his bit to the creation of a film.

All this may seem impossible, yet to practice these objectives are not too hard to achieve. There are many others for whom these qualifications are basic attributes. In this day of competitive production, it becomes increasingly necessary for the skilled editor to use every means possible to improve his art.

It would also seem that the specifications listed would also be required of others in the film-making process, particularly the director. This is true. I firmly believe that everyone connected in any way with creative film making should have these essential qualifications, and should also have a thorough knowledge of the work of others in the creative process. The director, particularly, who coordinates all the work

Continued On Page 674



Courtesy Industry Film Producers Association

BECAUSE theatrical motion pictures are photographed with a highly flexible camera that may be raised, lowered, or dollyed about the set during a take, arbitrary restrictions are not imposed on writers, directors or actors. The result is a more realistic picture because, with no restriction on movement of either the players or the camera, the cinematographer is permitted unlimited compositional control of the camera throughout the shot. Moving the camera toward or away from players or other subjects during a take introduced the need for adjusting focus of the lens as the camera moved in order to keep the players "sharp" from start to finish of the shot. This technique is known as follow-focus.

It is the assistant cameraman's task to maintain sharp images by ruling the focus, i. e., continuously changing the lens to predetermined settings, as the action progresses, or as the camera itself moves about on a dolly. Follow-focusing is achieved with cameras such as the Mitchell by turning a knob on one side of the camera which is geared directly to the lens mount. In some cases a remote control is employed, which allows the assistant to work with more freedom at a distance from the camera. The same result, of course, can be accomplished by simply adjusting the lens mount manually.

Follow-focus requires the aid of a good assistant cameraman with experience and a knack of "hitting the mark" instinctively. This can be acquired through understanding of the principles involved and by considerable practice in developing the feel for coordinating camera, subject and lens movements.

The Hollywood assistant cameraman's accuracy in follow-focusing is a prime factor in judging his overall ability. The small producer of industrial or television films, with a camera crew able to deliver accurate follow-focus shots, can live the static deadliness of fixed distance shooting by introducing camera and subject movement factored in the best theatrical motion pictures.

The "secret" of follow-focusing is that it must be accomplished with an even motion. A simple analysis will show why the focusing mechanism for near distances on most lenses are spaced further apart than for greater distances. The space between two and three feet is a large turn of the lens mount—but the latitude for adjustment from twenty-five feet to infinity, particularly on a wide-angle lens, may be almost microscopic. Thus a person walking away from the camera at a constant pace requires revolving the



AS DOLLY MOUNTED camera follows players, assistant cameraman at side of camera, using remote focusing control, adjusts lens to keep subjects in sharp focus.

Follow-focus Technique

Sharp focus in moving camera shots achieved by careful focus changes during the take.

lens mount fast, and then slow as the subject recedes into the distance. Compensating the camera requires opposite treatment: very slow turning at the start, then faster until the final work. It must be borne in mind that focus must not only be accurate at either end of the change, but all the way in between. Anyone can turn a lens from one position to another, but actually "riding the focus"—so that a moving subject is sharp at all times—is not quite as simple.

There are four basic types of follow-focus techniques. These are sometimes used in combination on complex shots.

1. The camera moves about the set and films either stationary or moving action. It may either dolly toward or away from the set or it may track with the actors at a definite distance.

2. The camera is stationary but the subject moves toward or away from the camera.

3. The camera is stationary but is panned or tilted, or both, from one object or subject to another at a different distance.

4. The camera is stationary and films stationary action but various ob-

jects or subjects in the scene alternate in focus during the shot.

The first method—in which the camera dollies while filming a stationary or moving subject—requires the utmost smoothness in camera movement. The dolly must gradually accelerate, glide with a floating action, then decelerate to a stop. The camera must create the impression of floating through space; any jerkiness, bumps or erratic movement will detract from the picture.

Track should be laid for the dolly to travel on where the floor is uneven. An old trick in laying track is to have it tilt slightly in the direction the dolly rolls, employing gravity to aid without starting and movement.

In a simple traveling shot the camera moves in a straight line. The movement is axial when the camera moves forward or backward, lateral when the camera movements include a combination of any or all of these plus a broken movement, a curving movement or an oblique movement along a diagonal. Movement is limited only by the physical problems involved and the

Continued On Page 673



Which is the real Noel Brooks? Not the one at the right; that can't be crisp, vivid Miss Brooks. But it is! In fact, both are reproductions of prints from the same crisp, sharp negative. But the print at the right represents what happens when the laboratory is (1) forced to hurry; (2) forced to cut corners price-wise, while the shot at the left stands for EASTMAN all the way—negative and print stock—with time to do the job right. Finally, in case of questions—production, processing,



projection—always get in touch with Eastman Technical Service. For more information write or phone Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.



New System Of Light Measurement For Exposure

Binary exposure control system equates light and dark areas in scenes to produce a dependable exposure guide with a single reading of the meter.



FIG. 1—Foreground subject underexposed due to effect of the large bright background area.

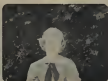


FIG. 2—Foreground subject underexposed due to effect of the large dark background area.



FIG. 3—New "area effect" is effect by the balanced binary principle: the light energy received from both the entire scene and the smaller preferential area are modified by the measuring instrument so that both areas have an equal influence on the exposure control.



FIG. 4—The "area effect" from the bright background is offset by the increased binary principle: the powerful influence on exposure control exerted by the preferential area offsets the underexposure influence of the large area of bright background in the scene.

How would you like to operate a professional camera, of the new-rod or other portable type, equipped with an electric eye exposure control? In the field it would only be necessary, for exposure control, to aim the camera and then turn the lens diaphragm ring until a pointer, seen in the viewfinder, moves to a reference mark. The results would be excellent exposures.

This possibility has been brought distinctly nearer with the advent of a new system of light measurement for exposure control. It is called the Binary Exposure Control System. You will probably be hearing more about it in the future. The improved exposure results are of such quality as to be suitable for professional cinematography.

The new system has some very interesting and useful features, which will be described here. In order to view this new development in appropriate perspective, let us observe some of the exposure control systems in general use at present. Included are the following:

1. Measurement of overall scene brightness.
2. Measurement of spot brightness in a scene.
3. Measurement of the incident light on a scene.

Each has some advantages and some disadvantages.

For example, measurement of overall scene brightness is easy to use. However, accuracy depends very heavily on the composition of the scene. If the scene has an average reflectance of about 10 to 20 per cent, and not much contrast between foreground subject and background, the exposures can be very good. Departure from these specifications for scene composition can result in quite inferior exposures.

One particularly disturbing aspect about the measurement of overall scene brightness for exposure control is the "area effect." When exposures are controlled by the overall scene brightness method the "area effect" causes the average overall brightness of each picture to be the same as the average of every other picture, regard less of the subject matter in the picture. In practice this can be quite un-

Control

By DON NORWOOD

desirable. As an illustration of the "area effect" consider a scene which has a light-tone portion of relatively large area, such as a sky background, as seen in Fig. 1. In such a case the light-tone portion, due to its large area, exerts too much influence on the exposure control. The end result is quite liable to be an underexposed foreground subject, as seen in the illustration. Conversely, if the scene has a dark-tone background of relatively large area, as seen in Fig. 2, the end result is quite liable to be a washed-out, overexposed foreground subject, as may be noted. Thus the "area effect," which occurs in every scene but is more harmful in some than in others, constitutes a considerable handicap to the over-all scene brightness method of exposure control.

Measurements of spot brightness for exposure control can be quite effective. Good results occur because this system is practically free from the "area effect," instead of measuring large areas, this system just measures simple spots in each of the different areas of a scene. However, there is a serious disadvantage to this system. There is a requirement that multiple readings be made if good results are desired. Readings are required on high-light areas, on shadow areas, on medium-tone areas, etc. Then a calculation must be made to find the average of all of these readings in order to arrive at a determination of correct exposure. Many photographers are reluctant to devote the time and effort required for the multiple readings and the calculations.

Measurement of 3-D incident illumination has possibly turned out to give the most dependable results. This system is entirely free from the "area effect," since the meter and does not "look" at the scene, but simply measures the illumination thereon. Due to the consistently excellent results provided by this system it is in quite general use among professional cinematographers, also among some hundreds of thousands of amateur photographers. However, in a very limited number of circumstances, the use of this method is inconvenient or impossible. There are occasions, such as when 1-



FIG. 2—Photographs of two TV screen images which illustrate how the foreground subject is usually positioned in the "preferential area"—the center of the frame.

ing a picture out of the window of a plane in flight, or out of a train window, etc., which constitute situations where it is inconvenient or impossible to obtain an incident light measurement. This is a small but definite handicap.

No one method of light measurement for exposure control has heretofore been available which would handle all photographic scenes easily and with the required accuracy. This situation has been recognized here, and has caused us to engage an extended

research in our laboratories in an effort to develop such a method. The qualities sought in a superior method include—

1. Universal application, without awkward changeover of parts.
2. Suitable accuracy.
3. Operation from camera location.
4. Ease of operation.
5. One-shot operation.

Feature No. 5 enables an exposure meter to be calibrated directly in $f/stop$. It also permits the system to be used for direct operation of the exposure control in an electric-eye cam-



FIG. 4—The Norwood 3-D incident light meter, which incorporates an advanced principle of light evaluation for photography.

ers. It is of course obvious that a direct reading in *f/stops* on an exposure meter is equivalent to the direct setting of the camera lens aperture in an electric-eye camera.

The newly developed Binary system provides all of those five above-listed desirable qualities. It is also equally useful in an exposure meter or in an electric-eye camera.

The Binary system responds to the light reflected from a photographic scene. It does this in a novel manner heretofore unknown. The principle employed offsets the undesirable "area effect," thereby providing greatly improved accuracy. It is operable at camera location, which is a feature of considerable convenience in an exposure meter, and is essential in an electric-eye camera.

New Concept

A new concept is involved which takes into account the fact that in photography in general, and in cinematography in particular, each scene usually has both a foreground subject and a background. These may be similar in tone, or quite dissimilar. The foreground subject may be classified as:

Dark-tone, or
Medium-tone, or
Light-tone;

and the background may be classified as:

Dark-tone, or
Medium-tone, or
Light-tone.

A foreground subject of any one of those tones may be found in combination with a background of any one of those tones. Some of the possible combinations have a foreground subject and a background which are similar in tone, such as a medium-tone foreground subject and a medium-tone background. Other combinations have elements which are only moderately dissimilar, such as a light-tone foreground subject and a medium-tone background. The first mentioned combinations are the easy ones with respect to exposure control. The second group presents somewhat more difficulty. Still other combinations, furthermore, have some elements which are quite dissimilar in tone, such as a dark foreground subject in front of a light-tone background. These present real exposure problems. The problems become very serious if the foreground subject and the background are also dissimilar in area, which is usually the case. The background is generally much larger. Due to the "area effect" the larger area exerts more influence on the exposure control, at the expense of the smaller area

The author, Dan Harwood, is the inventor of the 3-D incident light meter which bears his name, and has written numerous technical articles on photographic exposure and exposure measuring procedures. He is an Associate member of the American Society of Cinematographers and President of Harwood Instruments, Pasadena, California, engaged in research and development of light-measuring instruments for photography and television.



Dan Harwood

The end result is that the more important, although smaller, foreground subject, which should have the most influence on exposure control, instead has the least.

The new invention, however, offsets the "area effect." It does this by means of first recognizing two fields of influence:

1. The Entire Scene Area. This includes both foreground subject and background.

2. A Preferential Area. This is designed to include chiefly the foreground subject.

It then proceeds to simplify the influence from the Preferential Area relative to the influence from the Entire Scene Area. The system operates to give the relatively small Preferential Area an exposure control influence of 50% of the total, while holding down the exposure control influence of the larger Entire Scene Area to the other 50% of the total. This arrangement has been found to produce consistently good exposure results.

Fig. 3 presents an example of a light-tone foreground subject in combination with a large dark-tone background. The figure illustrates how the light energy in the smaller Preferential Area is amplified until it has an exposure control influence equal to the exposure control influence of the light energy in the larger Entire Scene Area.

Areas Exert Equal Influence

Fig. 4 presents an example of a dark-tone foreground subject in combination with a large light-tone background. This figure also illustrates how the light energy in the smaller Preferential Area is amplified until it has enough influence to counterbalance the influence of the light energy in the larger Entire Scene Area.

The end effect in each case is that both areas, the Entire Scene Area, and the Preferential Area, have equal weight in the final exposure determination. As a result the exposure will be so adjusted between the two as to give the best compromise for both.

Whatever the combination of scene element tones may be the system response to each area acts as an anchor to prevent the response to the other area from running away with the control. Thus the influence of a large dark-tone, or light-tone, area in the background is held in check by a small foreground influence. Or, a large change in foreground subject, such as a change from a light-tone to a dark-tone object, is held in check by a stable background influence.

Furthermore, if both foreground subject and background are light-tone, then the system responds correctly with an indication of somewhat smaller lens aperture, which prevents overexposure of those prevailing light tones. Conversely, if both foreground subject and background are dark-tone, the system responds correctly with an indication of somewhat larger lens aperture, which gives adequate exposure to those prevailing dark tones.

Operation Is Automatic

The functioning of the system is fully automatic. There is an optical means which forms images of both the Entire Scene Area and the Preferential Area. These images are then separated, each is treated appropriately, so as to relatively simplify the light energy in the smaller Preferential Area. The light energy in the modified images is then integrated and projected onto a photoelectric cell. The cell, in turn, actuates a meter movement to denote a correct exposure for the scene.

There is nothing for the operator to do except aim the instrument and note the indicated *f/stop*.

A hand-held exposure meter which embodies the new principle is illustrated in Fig. 6. This instrument is compact, being less than 2½ inches long, and less than 1 inch thick. It has a photocell of the CAS type and uses a small mercury battery, which costs about 35¢ and which can be replaced about once a year. There is a push-button switch which is used to put the meter into operation. Adjustment for Film Index is made by a small removable slide. The meter pointer directly indicates the appropriate *f/stop* for the camera lens.

There is a viewfinder which defines the Entire Scene Area, and also the Preferential Area. The Preferential

Continued On Page 444

Inspect every foot before it leaves your plant with the HFC High Speed Heavy Duty Inspection Projectors -- 16mm & 35mm models now available.

NEW

The projector is a converted front shutter Simplex with a two pin intermittent, 16mm or 35/32 film runs at a speed of 144 ft. per minute while 35mm film runs at a speed of 186 ft. per minute.

1. A variac controls the light intensity.
2. A 500 watt lamp is used for 16mm and a 1,000 watt for 35mm (a blower is used to cool the lampchamber).
3. A 2 1/2 inch projection lens is furnished with each unit.
4. A start stop lever controls the power to the lamp and motor.
5. The magazine and take up cone takes up to 3,000 ft. of film.
6. Upper guide rollers are made to handle the film from either direction of the feed reel.
7. A free wheeling take off flange is provided in the magazine.
8. A lamp near the takeup reel permits hand inspection of the film prior to takeup.

NOUVEAU

Le projecteur contient un obturateur Simplex anterior transformé avec deux vitesses intermittent. Les films de 16mm ou 35/32 tournent avec une vitesse de 144 pieds à la minute, tandis que les films de 35mm tournent avec une vitesse de 186 pieds à la minute.

1. Le regulateur de voltage d'intensité d'éclairage.
2. La lampe de 500 watt est nécessaire pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mis en oeuvre pour refroidir la chambre de la lampe).
3. L'objectif de 2 1/2" est installé.
4. La manette de mise en marche et d'arrêt contrôle au même temps la lampe et le moteur.
5. La boîte de films avec rouleau peut contenir 3000 pieds de films.
6. Le rouleau supérieur est constitué de manière de recevoir le film dans les deux directions, normale par la bobine entrante.
7. Une roue est installée pour libérer rapidement le film de la boîte.
8. La lampe se trouve près de la bobine recombinaison, et donne toute facilité pour inspecter le film à main dans le projecteur.



NUOVO

Questi proiettori sono Simplex trasformati, obturatore al fronte, meccanismo di scatto a due pini. La velocità di proiezione è 144 o 35/32mm e di 186 piedi per minuto, e la 35mm, di 186 piedi per minuto.

1. Controllo manuale della luminosità delle lampade.
2. Lampada di 500 watt per 16mm e di 1000 watt per 35mm.
3. Obiettivo di proiezione di 2 1/2".
4. Maniglia per controllo di motore e lampada di proiezione.
5. La cassetta porta pellicola può contenere 3000 piedi.
6. I rulli superiori di guida sono costruiti per operare con film proveniente da entrambi della bobina avvolgitrice.
7. Disco con montature sporgente sul mezzogiorno.
8. Una lampadina durante le bobine avvolgitrice, permettendo l'ispezione manuale del film prima che si avvolge nel proiettore.

NUEVO

Esta máquina es un proyector simplex convertido, obturador al frente y movimiento intermitente a doble grifa. Para 16mm o 35/32mm, la velocidad por proyección es de 144 pies por minuto, para 35mm es de 186 pies por minuto.

1. Un controlador controla la intensidad de la lámpara de proyección.
2. Una lámpara de 500 watt, y una de 1000 watt para 35mm (un chorro de aire ventila las cámaras en ambas cámaras).
3. Este objetivo está provisto de un lente de proyección de 2 pulgadas y media.
4. Una palanca de control opera el motor y la lámpara simultáneamente.
5. Capacidad de proyección: rollos de hasta 3000'.
6. Los rodillos de guía superiores operan con la película en ambas direcciones.
7. La tapa de la bobina de carga es desmontable.
8. Una lámpara ubicada junto a la bobina de toma permite la inspección manual de la película antes que se rebobine en la bobina superior del proyector.



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NINE GUIDES TO GOOD NARRATION

The great problem in narration writing is to keep it fresh and vital every screen minute.

By LEE CHANEY

Development Producer, Fuller & Smith & Post, Inc., Los Angeles

IF YOU'VE EVER seriously studied screen writing, you know that there are several well-documented textbooks that explain in detail how dramatic screenplays are written. None of these, however, take the time and trouble to explain the fine points of writing good narration. The fact that very little has been published on the subject doesn't mean there isn't a background of experience on which to call. At least 30% to 75% of the motion pictures made in the United States annually are of the narration variety. No longer can one ignore the importance or the sheer quantity of narration that's turned out every day.

With this in mind, let's take a good look at what makes narration good and what makes it bad. Out of studio experience in Hollywood there have come certain observations about narration writing which have, in the past, passed from writer to writer by word of mouth. The following techniques are practical ways of doing things which, if taken into consideration, result in good narration with a minimum of time and work. Lest someone consider them in-violate, we hesitate to label them rules.

1. Never Describe What's On The Screen

How many times have you watched a motion picture in which the narrator groans on in this fashion: "Here we see a Mexican peon leading his burro to the market place in the tiny village of Mitla."

Accompanying these words, one sees on the screen a scene that exactly matches the narrator's description. When this happens, do you feel that your intelligence has been insulted? You should! The narration writer has simply described what is obvious to the eye. The only new information offered is the fact that the peon is headed for the village of Mitla. Narration of this kind simply states what is shown on the screen, whereas it should give additional facts.

The point is: Never tell your audience what they are seeing, when what they are seeing is fully apparent. If you can't add something interesting that supplements the picture, then don't say anything at all.

This brings up another basic point. Narration is less important than the picture, and often less important than the music and sound effects. The narration should supplement, explain, and interpret the picture. The picture should never simply illustrate the narration. When the latter happens, one ends up with an illustrated lecture rather than a motion picture.

There are times, however, when the action is sufficiently complicated and unfamiliar to the audience that you do have to explain what's happening on the screen. An educational picture which depicts a physics experiment is a case in point. Or an orientation picture that demonstrates the disassembly of a piece of highly sophisticated machinery. In such special cases, the extent and detail to which the narration must go to explain what's happening on the

Continued

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NARRATION

screen depends on the level of understanding of the audience in that particular area. But, again, the narration should never talk down to the audience or bore them by explaining things they already know.

2. Never Describe What's Not On The Screen

How many motion pictures have you suffered through that resorted to the following diabolical trick: In an adventure film of the Far East, the audience is shown a beautiful scenic shot of Hong Kong. Over this scene the narrator reveals that there are hundreds of opium dens within the city. Never once does the audience actually see what the narrator has described.

Do you feel cheated? I always do. My feeling is: If you're going to talk about opium dens, let's see them. If you're not going to show them, then don't bring the subject up. If the filmmaker lacked sufficient professional acumen to obtain pictures of opium dens in Hong Kong (if there are any), he shouldn't remind the audience of his lack of ability.

In the same class are certain adventure-filmers on the lecture circuit who relate adventures to their audiences during which "there was so much happening, as one shot any film." I would just as soon not hear about it at all.

In the two cases just mentioned, the filmmakers wanted to include facts in narration which weren't supported by the film they had available. It's best to restrain one's self and be honest with the audience. If you make an unusual claim, then back it up with visual proof. Otherwise you may lose the valuable trust the audience has placed in you. Let them question the validity of small points you may have stretched, and they'll soon learn to question everything you have to say.

3. Interpreting What's On The Screen

If a good narration writer isn't supposed to describe what's on the screen or what's not on the screen, what's his job? Admittedly, when one considers that the visual image is 96% effective and the aural perception is only 10% effective, it seems that the job of the narration is rather small. But therein lies a fallacy. Let's suppose that identical newsreel footage is used by two political groups in the making of films slanted to their opposing viewpoints.

Both films present the same visual picture on the screen, but what the audience thinks it sees is colored by the interpretation the narration can give it. An audience watching either film would devote 96% of its perception to the visual, but would still come away with entirely different impressions. Seen in this light, the importance of the narration becomes apparent.

The narration supplements the picture with information that the audience would not gain solely by watching the picture. It has the important job of creating an attitude or feeling toward the picture on the screen—of supplying the audience with an interpretation of what they are seeing.

Consider this situation: The audience in a newsreel theater sees the coverage of a large apartment fire in Rome. The first several scenes show the raging fire in full force. This is followed by scenes of a fireman talking to a middle-aged woman who is hysterical with grief, the fireman helps the woman. The woman is surprised, etc. In fact, she is so shocked, a look of disbelief spreads across her face. A second later, she excitedly points to the burning building.

Is the audience witnessing an example of hostility of public officials? The picture could be interpreted that way. But as the narrator explains, the woman was so overcome with grief, she couldn't coherently inform the fireman that her invalid father was still trapped inside the burning building. Later the audience sees the rescue of the invalid and the fireman becomes a hero in the public's eye.

4. Write As Little As Possible

Most writers feel that they are expected to write. And if one is being paid to do the job, the feeling is more intense. One is expected to show tangible evidence that he's done something for the money. As a result, the narrations of many motion pictures are cluttered with unneeded sentences simply

because the writer did what he thought was expected of him.

What many people fail to realize is that a narration writer earns his money equally well by not writing. It requires considerable experience, artistic judgment, and a good measure of common sense to know when and when not to comment on action that appears on the screen. By leaving judicious pauses and allowing the visual image to do its own work, the few comments that need to be made are given added import. If a motion picture has been well photographed and skillfully edited, the periods of music and sound effects will far outweigh the periods of talk.

With this philosophy in mind, the narration writer carefully selects the comments he wishes to make. The number of ideas that can be conveyed are limited. After choosing what he feels are necessary statements to interpret the picture to the audience, the writer then sets out to express each idea in as few words as possible.

Writing in this manner isn't easy. It's much simpler to be verbose than concise and succinct. Brevity requires a certain clarity of thought and ability to organize details into a meaningful whole. In other words, you must distill concepts down to their very essence.

I've often admired Chinese proverbs for this quality. Despite translation, they still retain the majestic simplicity of pure statement that any writer would be hard put to improve upon.

Concise writing has another facet that an aspiring narration writer should strive for, and that is simplicity. By this term we mean the ability to take a highly complex idea and explain it in terms anyone can understand. In our modern civilization, there seems to be two opposing trends in the scientific battle. On one side are government bureaucrats, scientists, doctors, and others who seem to go out of their way to invent words and trade expressions that often confuse people outside of a special field.

This situation has led to the creation of a technical writer whose mission is life in just the opposite. These will paid individuals translate specialized jargon into simple terms that non-specialists can understand. This should also be the goal of the narration writer, since most motion pictures are directed to as large an audience as possible.

5. Use Simple Language

Since early school days, most of us have been taught that a large vocabu-



lary is something desirable to acquire. Being able to choose just the right word to express the exact nuance of meaning our wishes to convey is considered proof of a well-educated individual. Further, we are told by some authorities that the number of different words a man uses in his everyday language is a significant indication of his success in life.

Using well chosen and uncommon words in conversation also impresses people. No doubt about it. However, a good narration writer should refrain from simply trying to impress people with his command of the English language. Take a few minutes to study a newspaper and determine for yourself the extent of the vocabulary used. Or listen to radio or TV news with the same purpose in mind. You'll find that the total number of different words used is surprisingly small.

Newspapers, radio, television, and motion pictures all have the same common objective: to communicate ideas as quickly and simply as possible—not to educate the public. Uncommon words slow up the process. I don't advocate writing narration with the Basic 500 words, but I do recommend that the writer consciously try to use good hard-working communicative words in preference to those that are just impressive.

If a motion picture audience hears an unfamiliar word in a narration, their attention will be diverted while they think back on the word's meaning. The same thing happens when a word is incorrectly or unclearly pronounced. In trying to fathom the meaning of a word, the audience may miss the meaning of an entire thought.

5. Use Colorful, Action-Filled Words

The use of well-known words doesn't seriously confine a writer, but it may crank in his writing becoming flat or mundane. To enliven narration with flair and excitement, it's well to cultivate the use of colorful words. What are they? Consider this narration:

"His reputation for being honest, with courage to face the future, made him the symbol of a cause, and people began to follow him."

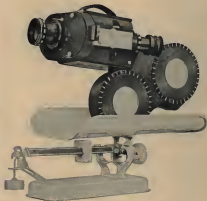
Or this:

"His simple honesty and courage touched something basic in the hearts of Americans, and a chain reaction began."

Which do you like? The first example sounds testbookish. The second

Continued On Page 870

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By DON MOHLER

Director of Technical Photography
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FIG. 3—Two groups of photolamps available from General Electric Co. All are short-life, high efficiency, 120-watt lamps offering a wide range of wattage, life and beam spread. Those pictured below are 3400° K lamps, those above, 2200° K.

THE PHOTOGRAPHY of motion pictures for television and TV newsreels and the increasing use of location interiors and natural locales by studios and other film producers has demonstrated the importance and the practicality of small, compact lighting equipment for lighting sets and set-ups. Industrial film photographers and those in in-plant film units, who shoot much of their footage in actual locales instead of studio sets, are swinging more and more to the use of small, compact incandescent photolamps for lighting such interiors.

With the high-efficiency photolamps available today, any professional cinematographer can undertake just about any shooting assignment in a remote locale, confident that he can achieve high professional results in the lighting.

In the beginning, the photo-flood lamp was originated as a powerful and efficient light source for

amateur movie makers who wished to film indoors. It wasn't long, however, before professionals saw its potentials and began to use it, too. Today, photo-floods are used increasingly in professional film making, and are a standard item of lighting equipment in all major studios. From the simple photo-flood has developed a wide range of photolamps offering a variety of light intensities, beam sizes and color temperatures (Fig. 1). Useful data on some of the popular photo-flood lamps presently manufactured by General Electric Company is given in Fig. 4. Like the familiar No. 1, No. 2 and No. 4 photo-floods, all the lamps described in this table are short life, high efficiency 3400° K lamps. All are 120-watt photolamps with self-contained reflector, different as to size, wattage, life, light output and beam spread.

The lamp data in Fig. 4 is useful in a number of ways. Take Wattage, for instance. If you are working on a location and using an ordinary household power circuit fused for 15 amps, you should not use a combination of photolamps whose combined wattage adds up to more than 1500. You can achieve this with three 500-watters, four 375's, six

	ASA	25	32	40	50	64	80	100	125	160	200	250	320	400
4														14
8														14
16														14
12														18
15														20
20														22
25														25
30														28
35														32
40														35
50														40
60														45
80		14		14	16	14								45
100	14	16		18	20	18								50
125	16	18		20	22	20								54
150	18	20		22	25	22								60
200	20	22		25	28	27	35	40	45	50	56	63	70	8
250	22	25		28	32	35	40	45	50	56	63	70	8	9
300	25	28		32	35	40	45	50	56	63	70	8	9	10
400	28	32		35	40	45	50	56	63	70	8	9	10	11
500	32	35		40	45	50	56	63	70	8	9	10	11	12.5

FIG. 2—Exposure table shows base exposure with photo-flood lamps at footcandle levels from 4 to 500, when shooting film rated ASA

25 to 400 at 24 fps. Chart can aid cinematographers maintain uniform key light levels and exposure, saving scene set-up

PURE LIGHTING FLOOD LAMPS

What the competent cinematographer can do
with simple, inexpensive photo lamps
operating from 110-V power sources
to light location interiors.

250's, or seven 200's. This wattage restriction would dictate using, for example:

One RSP2	—	500 watts
Two EBR	—	375 watts
		375 "
One DAN	—	200 watts
Total:		1450 watts

A good rule-of-thumb to follow, when working off household circuits, is never to use more than 100 watts of lighting units for each ampere of the circuit fusing. Thus, the combination of lamps shown in the example above, totaling 1450 watts, would be a safe one to use on a circuit fused for 15 amps.

In the matter of beam spread of the lamps under discussion, the flood beam is two times as broad as the medium beam; and the medium beam, in turn, is two times as broad as the spot beam.

The Beam Candlepower figures in Fig. 4 rate the various lamps as to their relative intensity of the illumination they deliver straight ahead. This will vary with the wattage. It varies according to beam spread, too. The EBR lamp, rated at 375 watts, gives more light than a BEP lamp (300 watts) for the same beam spread. The DAN (200 watts) gives more light than a DXC (500 watts) because

Lamp to Selected Distance in Feet	3.5	5	7	10	15	20	30	40
58	25	12	6					
60	20	10	5					
65	15	7	3					
100	5	2	1					
125	4	1	0.5					
150	3	0.8	0.4					
200	1.5	0.4	0.2					
250	1	0.3	0.15					
300	0.7	0.2	0.1					
400	0.4	0.1	0.05					
500	0.3	0.07	0.035					
600	0.25	0.05	0.025					
800	0.15	0.03	0.015					
1000	0.1	0.02	0.01					
1500	0.05	0.01	0.005					
2000	0.03	0.005	0.0025					
3000	0.02	0.003	0.0015					
4000	0.015	0.002	0.001					
5000	0.01	0.0015	0.00075					
6000	0.008	0.0012	0.0006					
8000	0.005	0.0008	0.0004					
10000	0.004	0.0006	0.0003					

FIG. 3—Chart shows drop-off in illumination volume in footcandles as lamp-to-subject distance is increased.

its beam is more concentrated. Keeping this information in mind can be extremely helpful to the cinematographer choosing lamps for lighting a given set-up. More important to the professional, perhaps, is the fact these beam candlepower figures can be used to arrive at the number of foot candles required for each scene or subject in order to achieve scene-to-scene uniformity in the lighting.

Say you plan to maintain a uniform level of 125 footcandles for your key light for all scenes; using monochrome film at ASA 160 to 200, your base exposure for all scenes will be around 1/4. With color film rated around ASA 90, you'd need to maintain a key light of 300 footcandles for 1/4. At 125 footcandles with color film, your base exposure would be 1/2.

With the same basic key light level and exposure, your entire production, no matter how edited, will

Continued On Page 88

GENERAL ELECTRIC PHOTOFLOOD LAMPS

Lamp Code	Watts	Life	Beam Candlepower	Beam	Beam Size	Beam Area
DAN	200	4 hrs.	18,500	Med.	2 1/4"	Med. Scr.
SIP	300	4 hrs.	21,000	Med.	3 1/4"	Med. Scr.
EBR	375	4 hrs.	14,000	Med.	3 1/4"	Med. Scr.
BEA	375	4 hrs.	16,000	Med.	5"	Med. Scr.
DXC	500	6 hrs.	6,500	Flood	5"	Med. Scr.
DXB	500	6 hrs.	50,000	Spot	5"	Med. Scr.
DXA	450	16 hrs.	30,000	Med.	4 1/2"	Med. Scr.
DRN	550	8 hrs.	25,500	Med.	4 1/2"	Parabolic Castoff
FRJ	850	16 hrs.	80,000	Spot	4 1/2"	"
FRF	850	8 hrs.	30,000	Flood and Spot	4 1/2"	3-Prong

FIG. 4—Chart shows at glance the beam candlepower of various G-E photofloods, also their wattage, life and type of beam.



FIG. 5—The G-E battery-operated portable Cinema light with built-in charger. Designed for maximum scene freedom, the Cinema light is an exciting addition to TV news cameramen with its range of interchangeable high efficiency sealed-beam lamps that produce illumination up to 130,000 beam candle power.

35 MM COLOR FILM FOR TELEVISION

What you should know about the laboratory procedures necessary to turn out 35mm color prints for top quality reproduction on television.

THE PRODUCTION OF 35mm color prints to be used in television broadcasting is essentially the same as for the theatre screen, but with certain variations designed to adapt the release print to the requirements of the television chain.

Broadly speaking, a good 35mm color print will provide a good color television picture. This is evidenced by the successful use in television of color prints of productions which were originally made for the theatre. However, as the use of color film increases in television broadcasting, both the producer and the laboratory are able to sharpen their efforts for improved television tube reproduction.

Following is a check-list of the stages and services involved in the complete production process:

1. *Pre-Production Planning.* Everyone agrees on the value of a pre-production conference between the producer and the laboratory, but this conference is frequently bypassed in the rush of a late start for a fixed air date. Running exposure tests, make-up and other tests through the laboratory in advance can save a lot of time and money during production. In addition, the lab can assist the producer by explaining the printing choices available to him, and the advantages in A-and-B printing, etc.

2. *Original Exposure.* Television's color experts agree that the greatest single control point is at the camera. Adjustments in timing, color corrections, and printing methods can improve certain photographic lacks and overcome some problems, but the basic exposure remains the most important single item in determining eventual release print quality.

Most of the practices recommended for black-and-white films for television apply to color, plus some special recommendations that apply specifically to color. Since there is little or no provision for contrast control in color negatives or color prints, more of the burden of producing acceptable color prints for television falls on the original photography and lighting. Exposure of negatives should print well up on the color printing scale. Under-exposure should be avoided.

The lighting ratio of key to fill light should be kept close to 2 to 1. (Excessive contrast cannot be corrected in the print.) Wherever possible, the scene should have some color contrast.

Just as in black-and-white, each scene should have some light reference (brighter than face or point of major interest) and some dark reference.

There are certain things to be avoided in planning a scene for television that otherwise result in problems in television transmission. These include unlighted faces, unlighted large areas of shadow, back-lighting (except for desired effects), large areas of any single unbroken hue (unless they contain some pattern that will serve to produce video information within the area), small patterns of dots

or lines (since these may cause an interference pattern effect), the darker shades of reds in makeup (since they tend to become considerably darker and unsaturated in color TV transmission), and taned faces (which are accentuated in transmission). However, as a general statement, it may be said that well-photographed material made for theatrical purposes will transmit well over color television.

3. *Negative Developing and Daily Printing.* This is where the lab is first called upon for high-speed operation. The 35mm color negative exposed during the day is rushed to the lab for developing that same night, with dailies printed during the early morning hours so that the production crew can review the previous day's results the following morning.

The normal requirement is for 35mm color dailies with simple corrections to smooth out the overall appearance of the color, but with no attempt to provide fully-corrected color at this stage.

4. *Positive Editing.* This is in the hands of the producer, with the laboratory involved only in making replacements or additional dailies as required, and in providing 35mm color master positives (also called interspersives) for optical work.

5. *Negative Cutting.* Prior to cutting the negative against the edited daily workprint, the cutter should be aware of an available option. For theatrical film distribution, the negative is normally cut in single rolls, with optical dupe sections cut in. This practice is also followed in preparing material for television prints. However, the 35mm color negative may be cut in A-and-B rolls with scene overlaps planned so that fades and dissolves can be incorporated in the printing process. The latter method is utilized primarily to retain the same generation of printing—that is, the entire release print will be made from the edited camera negative, and not from camera negative intercut with optical dupe negative sections as in single roll printing.

6. *First Trial Printing.* This is the critical viewing stage when full corrections are made for color, density, optical effects, and many other special effects. New printing equipment, recently available, provides a greatly increased control in printing. The new machines have very important advances over the older equipment. They utilize the newer additive color correction, rather than the subtractive color process, to make possible faster operations; and the results are apparent in an improved print. The new printers also provide a much wider range of timing in density corrections, and have a very fast shutter so that timing changes are made practically on the frame-line. This is particularly important in the print designed for television because obvious changes in color or density tend to upset the television transmission system, resulting in flop-over and other picture distortions at scene changes.

The controls available in the new printer eliminate this potential problem.

The Society of Motion Picture and Television Engineers has a committee at work developing recommendations for standards in the field of color printing for television. Although it is too early to report on their findings there is one fact that seems to stand out quite clearly—that the color and density timing of the print for television is considerably more critical than for screen projection. Slight variations in either density or color, which would not be picked up by the eye in viewing the picture on the projection screen, are accentuated by the television system with the result that they are quite apparent on the tube. Obviously, the work of the laboratory in timing prints for television becomes an extremely important factor.

7. *Release Printing.* Printing requirements vary. The normal order is for a relatively few 35mm color prints for network origination or a metropolitan station, plus 16mm color reduction prints either for stand-by use or for the station equipped only with 16mm projection facilities. The print order beyond this is for 16mm black-and-white prints. To provide these, a 35mm black-and-white panchromatic fine-grain is made from the edited negative and a black-and-white dupe negative is printed from the fine-grain, either 35mm or 16mm. Largely due to the greatly improved quality of 16mm prints from a 35/32mm negative, the 16mm print requirements now specify contact rather than reduction printing.

There will be greater use of color in the 1963-64 season than there was in the 1962-63 season, and the signs are becoming clear that TV color is well on the way. Eventually this will result in quantity print orders being placed for color 16mm prints, just as it is now placed for 16mm black-and-white prints. This will demand contact-printing from a dupe negative and, ultimately, become contact-printing for the same reasons it became so in black-and-white.

Production of film for network color origination is largely in 35mm, with a few shows being shot in 16mm Ektachrome. Of the latter, some of the 16mm camera original goes directly into 16mm release printing—either reversal prints or color positive prints through a color internegative. Some material produced in 16mm Ektachrome is blown up to 35mm dupe negative, so that 35mm color prints can be provided to meet certain network or station requirements. There are apparent savings to be made by producing in 16mm color—the lower costs of film, developing, and the intermediate duplication stages. However, the 35mm color negative continues to produce the best end-product in a release print, and we believe it will continue to be the major source of supply for network and syndication film production. 16mm color will be used in greater

Continued On Page 476

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"LILIES OF THE FIELD"

Continued From Page 441

Brothers after 29 years as staff Director of Photography. He pioneered the use of such equipment along with electrician Lloyd Cornell, who later developed the units that bear his name. Haller has since used them extensively on assignments all over the world (He has just completed shooting the new Bette Davis film, "Dead Ringer" much of which was filmed in the large DeSoto mansion in Beverly Hills. Haller estimates that at least half the picture's total footage was photographed with the aid of these small portable lights.)

The interior of "Lilies of the Field," posed many lighting challenges. The main room of the man's living quarters was located inside a ramshackle structure that already existed in the locale. The painted plaster, which was curling off the shabby walls and ceiling, was removed and cast position board that looked like plaster was nailed onto the studs. The ceiling rafters were left exposed so they could be used as supports for small clamp-on light units. When ceilings were to appear in a shot—which was often—the section to be shown would be temporarily covered with the composition board. In lighting this room for daylight scenes, in which both the interior and exterior were to be visible at the same time, the interior light level had to be built up appreciably to balance the 1/25 light outside. The fan scene of the actress called for people outside to appear at the window to talk to those inside precluded the use of the large neutral density gels customarily used on windows to cut down exterior light in such circumstances.

For night sequences inside the rooms Haller created a mood in key with the story values. No particular light source had been indicated in the script, but he reasoned that the building would probably not have electricity and that the 1860s, having come from Western Europe, would tend to use lamplight as a carryover from their former environment. Consequently, in some scenes he established a hanging oil lamp overhead and in others an oil lamp on the table, as the light source. Because it would have been difficult to get an exposure with only the actual light from the lamp, he carefully placed a small electric globe in the

lamp, hidden from the camera by the work, to produce the required exposure light. He "painted" the room with mood lighting in key tones of 160, and 200-watt lamps intensified by increasing the voltage with a converter. Since an Art Director was attached to the company, Cinematographer Haller directed the placement of the sparse furniture and props to contribute most effectively to photographic composition.

Among other location intricacies was a roadside restaurant in which the portable Cornellite equipment proved most effective for lighting. Here it was necessary to employ an 18mm extreme wide-angle lens in order to make an important establishing shot. This created the problem of leaving so little room outside of camera range in which to place lights, especially since the ceiling was to be shown in the composition, that lights had to be carefully hidden behind any objects that would serve to conceal them.

Another problem was shooting a lip-synce sequence inside a house trailer, the traveling home of an itinerant priest which he referred to as "the poor man's Vatican." An actual trailer was used instead of a conventional studio "break-away," with a bay window at one end, which was removed so the cameraman could get an establishing shot, again using the 18mm lens. A 35mm lens was used for close-ups, and the tiny "set" was lit by means of small photo lamps mounted on the ceiling with tape.

The company brought along a crab dolly and a camera boom, but there was barely enough room to use the crab dolly in the man's quarters set, and there was only about three feet of space available in the main room for dolly movement. The floor was full of holes, so a smooth surface for dollying had to be created by nailing sheets of plywood over the rough planking.

Haller used Eastman Double-X negative stock on most of the interiors which did not include exterior backgrounds. He also used Double X when shooting night sequences at night. For day sequences he used Plus-X consistently. Working to the processing requirements of the Consolidated Film Industries laboratory, he exposed Double-X at 200 ASA and Plus-X at 80 ASA. For night photography he exposed Double-X at 250 ASA or 300 ASA, depending upon how dark he wanted the scene to go.

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Haller had some unusual problems in balancing the skin tones of various actors appearing together in scenes of the film. "I had worked with Sidney Poitier before in filming Stanley Kramer's 'Breaking Point' and I knew that because of his dark complexion I would have to use at least 75% more light on him than on the 'same' appearing with him in scenes," explains Haller. "Consequently, when more appeared close to him I had to be careful that this stronger lighting did not cause over-exposure of them. When you have a person of dark skin tone you have to light him visually against the background. You can't rely on an ordinary exposure reading because you would probably underexpose him. Here a grey-card exposure reading is advisable. In most cases where dark-skinned and light-skinned people appear together in one scene, I take a light reading of the lighter person and then balance the other to the point where he looks good to the eye."

Haller discovered that if he used a red filter deeper than a 21 when filming scenes with Poitier, he would lose facial detail; so on many of the close-ups where he elected to use a deep red filter, he would also use colored light on the actor—provided by a spotlight with an orange gel over the lamp. This expedient enabled Poitier's facial features to register more naturally.

On location the North skies were fairly dark, but the South skies were washed out, with little blue visible. There was one interesting sky situation in which Sidney Poitier was on top of a steeple, with the camera low shooting up at him against a deep blue sky. To create more contrast between subject and sky, Haller used a C-80 deep blue filter which, in effect, turned the film into virtually an orthochromatic condition and brought the sky down to a soft grey. It would have gone almost dead black, otherwise.

On "Lilies" there were many days of overcast weather alternating with bright sunny days. On overcast days Haller created source with lights and used deep red heavy-contrast filters; on brighter days he suppressed contrast to balance scenes for interesting. Even on bright days he kept contrast as low as possible so that if he ran into overcast he would not have to go too far to equalize the quality. He held back contrast with filters that would tend to flatten the grey scale, he said, and also used polar-

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creens where there was the proper angle of light reflectance. Usually, the filter combination used was something like K2 plus a Neutral Density, or, if contrast in the scene was unacceptably high, an X1/23 combination was used. In shooting day exteriors, if he wished to darken the sky without washing out flesh tones of players, Haller used a Wratten 23/56 filter combination—the red filter serving to darken the sky and the green preserving the flesh tones.

Haller used the pole screen to advantage on most exteriors, and even on some interiors, to kill flare. At times, when the sun was overhead at a 90 degree angle and not helping the scene any, he used a pole screen to reduce intensity of the sunlight and then injected illumination of lower intensity from the opposite side with arc lamps, thus substituting the sunlight on set and subjects to a point where the artificial illumination predominated.

When the chapel set for the picture was being erected, the entire south wall was left open to facilitate lighting and photography of the interior,

although this, of course, is not evident in the film. Here a novel method of illumination was employed; a large sheet of white muslin was stretched opposite the south wall opening to reflect sunlight into the chapel interior. This provided over-all soft illumination that enabled shooting at f/3.6. It was necessary to photograph people entering the chapel and to pan the camera with them as they proceeded to the pews and were seated. This meant that the camera, in this passing motion, ranged from the bright daylight coming through the door, acquiring a stop of f/22, to the more subdued area of the interior, where the working stop was f/5.6. To provide some balance in the interior lighting, Generalis again were used, and again mounted overhead, clamped to the rafters.

Although photography and lighting of the chapel interiors worked out satisfactorily, Haller believes he could have achieved still better results had the chapel been constructed with four walls. "It might have been a little tougher to work in," Haller said, "but as lighting it we probably would have come up with a better pictorial result."

NEW SYSTEM FOR EXPOSURE CONTROL

Continued from Page 655

Area is located near to the center of the Entire Scene Area. This is because there is a natural tendency on the part of photographers and others to so compose a scene or to so aim a camera that the important part of the scene is near to the center. Figs. 3 and 4 illustrate, on the left-hand side of each, the actual relative sizes of the Preferential Area and the Entire Scene Area.

Considerable research was conducted to determine the best relative size and location for the Preferential Area. Among other means used in this research was a rather interesting one which involved a study of scenes received on a TV set. A framing device made of heavy gauge wire was constructed and fitted to the face of a TV screen. (See Fig. 5). Many hours were devoted to watching innumerable TV scenes so framed. These scenes were the results of the efforts of many different cameramen. It was very interesting to watch scenes after scenes in which the principal object of interest was usually placed right in the Preferential Area.

The new system has been named the Binary Exposure Control System be-

cause it responds to two fields of influence in a photographic scene. The new meter is called the Narrowed Binary.

In the operation of the Binary meter, occasionally a scene will be encountered in which the principal foreground subject is somewhat off-center. In such a case I have found it practical, when taking a meter reading, to include the foreground subject in the Preferential Area of the viewfinder, even if that means shifting slightly away from alignment with the Entire Scene Area. Or, the subject can be asked to move momentarily into the Preferential Area. However, these off-center subjects occur surprisingly seldom, due to the natural tendencies, mentioned above, which are involved in scene composing and camera aiming.

The problem of the back-lighted scene, which formerly plagued the scene brightness type of exposure control apparatus, has been solved in the new system by the application of three remedies. First, the acceptance angle of the optical system is relatively narrow, for scene brightness systems, being of the order of about 25° in the horizontal plane and slightly over 10°

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in the vertical plane. Second, the lens is well recessed in the housing to provide shielding against light from outside of the acceptance field. Third, the unique Binary type of operation gives full value to the shadowed face of a principal foreground subject. These three means combine to prevent the severe underexposures which have previously been characteristic of the results given by the scene brightness type of exposure control apparatus when used on backlit scenes.

The Binary meter has been through capillary field tests over a period of time. It has been used under conditions which involved, as photographic subjects, scenes so composed that each represented one of the nine combinations of foreground subject tones and background tones previously discussed. Furthermore, each of those combinations was tried under conditions of front-light, side-light and back-light. This made a total of 27 different photographic scene situations. All of the tests were made with several color film, which is quite critical with respect to exposure.

The Binary meter has performed in a very satisfactory manner in all of the tests. The meter was taken along on a conducted tour in a foreign country, and used on all of those types of shots which tourists usually make. The



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performance was quite satisfactory.

Comprehensive tests and field use have demonstrated that the Binary principle is entirely sound, and that a basically new, unique, and quite desirable system of photographic exposure control has become available.

As previously mentioned, it is contemplated that the Binary type of electric-eye exposure control will be particularly useful on professional cine cameras of the newsworld type, and the portables used for field work. For professional cameras the preferable form of the Binary is the semi-automatic type. With this type the operator aims the camera and then turns the lens diaphragm ring until a pointer, seen in the viewfinder, moves to a reference mark. Such exposure control will be swift and accurate. It can be easily used under almost any circumstances, such as in a crowd, at a racetrack, at an athletic event, or wherever the action is rapid and the cameraman is pressed for time and space.

The Binary type of electric-eye ex-

posure control can also be used in amateur Super 8mm cine cameras. In such cameras the full-automatic form, but with a lens aperture latch available, is preferable. Casual picture-takers can operate such a camera on full-automatic full time. Photography will be simply a matter of aiming the camera and shooting. The more advanced and discriminating amateur will probably wish to follow a slightly different course. A recommended procedure consists of first aiming the camera at the scene in the manner outlined above for operation of the Binary exposure meter. Let the automatic exposure control adjust the lens aperture, which is practically instantaneous. Then the lens aperture latch is operated to lock the lens diaphragm. Then the scene is shot. The improved exposure results provided by the Binary system will have appeal to both the casual picture-taker and the more discriminating amateur.

The Newsworld Binary exposure meter, presently in production, can be used to advantage for both motion picture work and still camera work.

PSEUDO ULTRA-SLOW MOTION AT 64 FPS.

Continued from Page 443

Having taken into consideration set-offline reports which revealed that among the some 300 species of hummingbirds, wing-beat varies according to bird size—ranging from 8 to 80 per second, it was concluded, following careful study, that the hummingbird subject of our film beat its wings somewhere between 60 and 70 times per second.

Problem of Wing-beat Interval

By sheer luck—with the camera set at 64 fps—ideal photographic results were achieved. On scenes where both camera and wing-beat were in sync, the bird was caught with its wings fully spread so that as it circled nectar of a flower it appeared in a light movement from side to side. On the screen, the bird appears virtually to be dangling in mid-air, with its wings practically motionless. There is only one short section in the film where the wing-beat fell below 64 per second. In the rest of it the wing-beats were greater than the camera speed—just enough to take several seconds to complete one full cycle of wing-beat action and allow observation of the graceful "padding" or rotary motion of the wings—giving all the appearance of having been filmed in ultra-slow motion.

To keep the hummingbird into performing within camera range, we capitalized on one of its natural instincts—hunger. The bird was painstakingly trained to approach and eat at a "feeder" in the garden for several days. Later, when the feeder had been replaced by flowers of its liking, the bird became hungry enough to brave the presence of camera and cameraman working in the open.

To achieve the fastest possible exposure required using color film having the necessary emulsion speed (ASA rating) plus utilizing certain mathematical calculations and simple mechanics. Because two-thirds of the planned production was to be photographed with lenses of 4-, 6-, and 9-inch focal length, the field to be covered would be approximately one-square foot in extent. Also, extension tubes would sometimes be used with these lenses for extreme closeups. The problem of illumination and depth of field suggested the use of E. R. Ektachrome daylight film, rated at ASA 360, for most of the photography.

Staging The Action

Having established the film to be used, the next step was erecting a little stage consisting of a gray card exposed to the noon-day sun, with two

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small mirrors positioned in such a way as to reflect sunlight on the gray card from two directions. Reflected light meter readings were taken from the gray card, which, it was estimated, approximated the reflectance of the bird's plumage.

Further calculation indicated that a lens stop of $f/1.6$ could be used with a shutter speed of $1/13,000$ second. Thus in the period of one second, the "bummer" would beat its wings approximately 65 times. By dividing $1/13,000$ by 65, it was determined that the camera would record each wing beat for only $1/2000$ th of the full wing-beat cycle. Since the "bummer's" wing movement at the wingtips ranges in an arc of about $3\frac{1}{2}$ inches each way, or a total of 7 inches for the full arc sweep, it was obvious that it would be impossible to freeze the wing action completely; however, only a very small portion of the wing tip appears blurred in these shots, as may be seen in the sequence of freeze reproductions on page 643.

A two-inch lens having a maximum stop of $f/1.6$ was selected for this photography, because it permitted working with ample space between hind



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and camera. It would have been possible to shoot at an exposure of 1/25,000 second, had a faster, 1 inch lens been available, but the "hammer" would in all probability never allowed us to work any closer—which would have been necessary in order to cover the same field.

The Shutter Modification

The final task in preparing to shoot our subject was tackling the problem of reducing the shutter opening of the camera. Having installed several thousand variable shutters in Bolex cameras in recent years, the writer was fully conversant with this component of the camera and valued the reflex viewer of the Bolex which would permit maintaining focus while filming. To provide a shutter speed of 1/13,000 second entailed constructing a variable shutter consisting of two half-disc plates and mounting them together in the camera with an extremely narrow opening between them. (See accompanying diagram.)

Filming The Action

With the camera set up at the pre-determined location, we had in our view the hummingbird that was to be our movie subject. Suddenly it appeared and, after a couple of short back-ups as a result of the camera noise, it finally obliged by coming within camera range and performing those. Of course with every performance, it received a fresh bunch of flowers.

When half of the first hundred-foot roll of film was exposed on the initial trial runs, it suddenly occurred to me that perhaps we were getting nothing on the film; it was that some focus, being that humans move films, after shooting a subject which, in his subjective estimation, is of extraordinary caliber.

Had everything been calculated right? Would the bird's wing strokes correspond to the fps speed of the camera? Did the film move properly through the camera? Plegged by such thoughts, it was decided to cut and remove from the camera the exposed portion of the film and dash straight for the lab. Three hours later the footage was processed and we were avidly looking at it by holding it, unassisted for the first few feet, up to a light. Later, we put it on the viewer and could hardly believe what we saw until the film had been run through

the machine several times.

All the hours which had been spent in careful preparation had been fully rewarded. A few days later, the remainder of the film in the camera was exposed, and with similar good results. Several of the original 90 feet of this film has been included in the fully edited "Life Cycle of the Hummingbird." After having worked on this film for two years, the flight sequence seems a little longer. Most people who have seen the film, stimulated perhaps by having seen close up for the first time one of nature's real wonders, invariably let us know they would like "to see more of that ultra-slow motion hummingbird footage." *

*Obtainable in 35mm color or black and white, rental or sale, from Freeriproductions Distribution Films, Winston, III.

LIGHTING WITH PHOTOFLOODS

Continued From Page 459

exhibit scene-to-scene uniformity as to light quality and smoothness.

The exposure table, Fig. 2 is bell curve data as to base exposure at foot-candle levels of from 6 to 500 with films rated ASA 25 to 400, and shooting at sound speed (24 fps).

Fig. 3 is another useful table of foot-candle data. First, find out how many footcandles you get from any reflector photo lamp positioned exactly 10 feet from your subject. Then refer to the beam candlepower rating in Fig. 4 and divide the B.C.P. figure by 100.

For instance DAN with a beam candlepower of 10,500, divided by 100, gives you 105 footcandles at 10 feet, lamp-to-subject. This is your base.

Optionally, of course, you can do all this with your exposure meter and controlled lighting. If you can get the light you want, then all you need to do on the set is control it each time until you've built up to a pre-determined level, say 1/4.

The tables of beam candlepower values will help you determine what it will take to get the light you want at the distances at which you must work.

This approach is standard professional motion picture production practice. Footcandle meters are used to set

the keylight, and to measure and balance the fill and all other lights in carefully controlled lighting contrast ratio.

Obviously, if one lamp won't give you the desired light, you can use another right beside it to double the light, and two more to double it again.

Let's generalize for a moment about lighting for motion pictures. We see things better, and we like the way they look, if light hits them from an angle, rather than head on. This means using our main light high and off to one side, aimed back at our scene or subject.

We like a steady light—not one that flickers, wobbles about, changes direction or intensity. With few exceptions, a steady light is the kind we create for ourselves to live in, work in, and play in if we can. It's the kind that's best for movies. So we clamp our lamps in place, put them on stands, or otherwise anchor them so they stay put while we're shooting.

We like the whole place lighted—so we can see what's in the front and back of the picture as well as in the middle. So we strive for evenly lighted areas. Simplest way to do that is to bounce light off the ceiling. With today's film, lamps, and cameras—color photography by bounced light is easily possible in most location interiors.

Let's put this all together to see what it adds up to. For better lighted scenes we:

1. Light up the main subject from an angle.
2. Position our lamps fixed and firm.
3. Provide general illumination in the scene.

To do these three basic things, professional motion picture and television cameramen use direct and indirect lights of low, high, and very high intensity. They also use broad-beamed lights, medium beam lights, and narrow concentrated spot lights. They use lighted floor and table lamps within the scene itself for the sake of realism and naturalness.

Of course, to use photoflood lamps you have to have something to put them in. There's nothing quite so handy to put the light exactly where you want it, and keep it there, as an adjustable light stand with a swivel socket on top. These come in a wide range of types, sizes and prices. In order to get lamps up near ceiling

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level, you need one that rises to at least an 8 foot height.

Low cost clamp-on units can be used, fastened to doors, shelves, or mouldings. It's a good idea to buy such equipment complete with reflector to accommodate regular No. 1 and No. 2 photo-floods.

Of interest to the TV news cameraman and others who frequently are called upon to shoot in location where a source of domestic power is unavailable, is the General Electric Portable Cinema Light, pictured in Fig. 5. With its high intensity lamp and powerful nickel-cadmium battery, it divorces the cameraman from the need for wall plugs and extension cords. As portable as any portable motion picture camera, the lamp is designed for mounting on the camera, and it provides the bright light required for photography with color film. The unit's battery can be recharged countless times—with the recharging time about 60 minutes. Each charge is ample to supply illumination for a total of six minutes of shooting.

The special sealed-beam lamp, developed by G-E for the Cinema Light, features a double reflector designed to eliminate usually wasted "spill light." The lamp's three-hour rated life will see a lot of film roll through your camera before it must be replaced. The lamps are available in wide, medium and spot beam types, making this portable unit an ideal companion light source for those using substantially photo-flood lamps for their photographic assignments.

9 GUIDES TO NARRATION

Continued from Page 654

utilize words that give the sentence maximum of its own.

What are colorful words? Action words are usually thought of as derivatives of verbs, but existing, colorful words can be any part of speech. Some words by nature are grammatically perfect, yet sterile in character. Others are chunk full of life and personality. The important thing is the word's "flavor," the image it conjures up. Often such words have overtones of pleasant things like home, mother, children, hot dogs, the Fourth of July, or other images that make our American language rich in meaning. These are the type of words used by a tabloid reporter as compared to, say, a writer

in a scientific journal.

The narration writer can use colorful words to enrich his commentary with deeper meaning. And considering the small quantity of narration that accompanies a motion picture, such a style gives brilliance and authority to the brief comments made.

7. Use Good Transitions

Nothing loses an audience quite so fast as narration that flits from one subject to another without notice. An audience must be warned of the change, and the vocal signposts we use are called transitions. A transition can be a word, a phrase, a sentence, or a whole paragraph. As an example:

"Although the river is close at hand, its currents continually erode canyon walls, filling its waters with enormous quantities of soil. Thus fresh water becomes the first consideration in setting up camp. Once a location is selected by the leader of the expedition, the other boats quickly follow into shore."

Accompanying this narration, the audience sees a sequence of scenes revealing the word canyon walls that have been carved by the river. This is then followed by scenes showing the expedition heading its boats to make camp.

Near the end of the canyon wall sequence, the transitional phrase is spoken, when the narrator states, "Thus fresh water becomes the first consideration in setting up camp." The audience is forewarned that the canyon wall sequence is ending, and that the next thing they will see is a beaching sequence. When the beaching sequence follows on the screen, the audience isn't surprised. We telegraph what's going to happen next. Why? Here, an often happens in narration pictures, unrelated pictorial sequences are linked together. The narration, by a transition, attempts to bridge over the lack of continuity and show a logical relationship between the two sequences. The danger may be that, yet we can often successfully bridge totally unrelated subjects by giving them some logical connection. However, transitions aren't used entirely as first aid for ailing pictures. Even in pictures that have good visual continuity, transitions should be used whenever the subject changes. Good transitions are a necessity of good narration writing that make it flow so smoothly as to be unobtrusive. And that is the ultimate ob-

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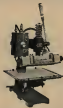
jective of narration as well as any other element that goes into the fabric of a motion picture.

B. Use Humor

The dearest and most sought after commodity in writing is humor. If you're a success at it, sooner or later someone will sit you down, look you squarely in the eye, and say, "I hear you're a gag writer. Say something funny!" No one seems to realize that creating humor is a serious business. I once worked with two clowns from Burman & Bailey Circus for several months. Offstage they were the most serious-minded individuals I've ever met. Every gesture, every move of their entire act was coldly pre-arranged.

People who write funny things aren't necessarily funny themselves. In fact, many gag writers I know are incredible cynics. Humor seems to be an attitude toward life and man's follies that enables one to see the comedy in it all. Some people have such a viewpoint, and others don't. If you have the natural gift, you're among the lucky ones. By using humor, you can educate people positively, change their opinions rapidly, even insult them while they laugh back. But don't expect to write

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funny narration out of a job's file. Humorous narration is seldom com- posed of jokes. It's a turn of phrase with a surprise ending, a rate way of expressing a thought, a play on words, even a rhyme or alliteration with a humorous twist. It may be an over- statement or understatement about something on the screen.

Beyond these fragmentary com- ments, we can only say: humor takes talent. Just how one writes it, many a high-priced gag writer would be hard put to explain. He just does it.

When writing for publication, one must keep a weather eye on grammar and punctuation. One fringe benefit of writing for the screen is the fact that one's writing will seldom be exhibited in black-and-white print. Punctuation can be non-existent, although correct punctuation aids the narrator who has trained himself to read ahead of what he's saying, and depends on periods, commas, etc., to guide his inflection.

9. Break The Rules

The narration writer doesn't neces- sarily have to write in complete sen- tences. The fact is, complete sentences usually sound stilted. Narration should, and people don't always utter their thoughts in complete sentences. If you transcribe someone's conversation, you'll find that people sometimes speak sentences, at other times phrases and often just words.

Don't be afraid to emulate the natural pattern of speech by writing narration that's composed of just words and phrases. If such writing looks naked in cold, hard type, then link the thoughts together with dots. Writing that's designed to be spoken will often look peculiar in print. Conversely, copy that reads well to the eye may sound pedantic when read aloud. For this reason, a narration writer should train himself to write vocally. Just mouth the words as one puts them on paper helps to develop a rhythm in the sounds that makes their planning to hear. Also, one becomes instantly aware of vocal traps—those combina- tions of words whose sounds make a phrase almost impossible to say.

In addition, reading aloud constan- tly reminds the writer to keep his sen- tences short. People have to breathe, and the writer helps his narrator by giving him natural pauses at frequent intervals for this purpose. This relaxes the delivery and enables the narrator to give his all to interpretation, with

out being solely concerned with trying to cover several lines of copy before the next breath.

Now about grammar. There are numerous examples in the English language when everyday speech differs from that which grammarians deem proper. The narrative writer often faces the dilemma of whether to use the sentence structure that's grammatically correct, or one closely resembling the way people talk. Naturally, the writer has a certain responsibility to the public to set an example. However, if a grammatically correct sentence sounds stilted, it's often better to forget the rules in favor of a generally accepted grammatical construction, if it makes the narration flow more smoothly.

The great problem in narration writing is to keep it fresh and vital every scene repeats. We've already discussed the choice of colorful, action words. In addition, the writer can vary his style and use certain literary devices. Among them, quotations, legends, dialects, dramatic pauses, slang, colloquialisms, incorrect English, even shocking statements. A good narration writer is ever on the search for new ways to make his writing interesting, to give emphasis when need be. And as often as not, the way to do novel things is to ignore the rules.

Conclusion

In the foregoing we are hopeful we have spoken some thought that will make your narration better. Or perhaps we have awakened an interest in this specialized field of writing.

One last bit of advice: If business you have to say, make it vitally interesting. My plea is to self-defense. I may be among the audience. ■

FOLLOW-FOCUS TECHNIQUE

Continued from Page 847

imagization of the cameraman and director.

A greater three-dimensional effect can be imparted in an axial dolly shot if the camera pulls back past people or objects — such as over tables, through doorways, under chandeliers — thus bringing things into view that seem to move past each other as they appear at the sides or top or bottom of the frame. In a lateral dolly shot people and props should be placed at various distances between the camera and the background. As the camera moves across the set they will appear to move at different speeds; the

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Perfect follow focusing should never be apparent on the screen, except perhaps on certain snap-focus changes where persons or objects shift in and out of focus in the same frame. All focus changes, particularly snap-focusing, should be used to dialogue or action or to a count so that camera crew and actors can coordinate their movements and accurately hit their marks. ■

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ED HORTON, second Unit work as above.

BOB GARDNER, "77 Sunset Strip".

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CREATIVE FILM EDITOR

Continued from Page 844

should be versed in the whole range of filmic arts. The editor's work is closely related to the director's, for it is less specialized than the tasks of his other colleagues. This accounts for the high percentage of good directors drawn from editorial ranks.

While it is true, generally, that one can acquire the necessary background without formal education, there is little doubt that there is a definite need for a planned, analytic study of the cinema in an editor's background—this in addition to his general cultural interests and knowledge. Movies are still a relatively new art, and even now, artists connected with films are groping, experimenting, and learning-by-doing. There are few principles which are firm and inflexible. We have to adapt techniques from other media to this field, and find new methods which satisfy the unique needs of this art.

But we are now entering an era where the old apprentice method and trial-and-error is no longer sufficient. From now on, unless an editor has the formal education in cinema which is now available in our schools, he will be left far behind those in the field. He will spend too long trying to find his own answers—answers which he could have learned more quickly and better elsewhere. The general level of educational requirements has risen in all fields, and film editing is no exception. ■

BEHIND THE CAMERAS

Continued from Page 838

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WILLIAM MARSHALL, ASC, BENJAMIN KLING, ASC, JOHN WARREN, ASC, "Allied High with Phoenix"

LEONEL LINDEN, ASC, RICHARD RAWLINGS, ROBERT HADEN, "McMillin's Navy"

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COLOR FILM FOR TV

Continued from Page 641

quantity, however, as the total demand for color film increases, to take advantage of the lesser bulk and weight of beam equipment and the lower cost of the production footage on those shows which require shooting ratios above 4 or 5 to 1. Examples: golf shows and other sport news, or outdoor events.

B Print Developing As previously mentioned, contrast control in color is not available in the same sense that it is in black-and-white print development. General Film Laboratories maintains three separate black-and-white processors: a low or soft contrast print, primarily for television; a high, or hard, contrast print for the projection screen; and an in-between contrast print to handle special problems. One type of processing is presently available for the color print, at General as elsewhere. Therefore, contrast control is presently the function of original lighting and exposure (as in black-and-white) and the density timing and color timing of the print (to a much greater degree than it is in black-and-white). *

INDEX TO ADVERTISERS

	Page
American Cinematographer Manual	655
Arco	621
Ariflex Corp. of Amer.	425-629
Bach-Artikon, Inc.	625
Birn & Sawyer Cine Equip.	623
Business Screen Magazine	668
Bynes	4th Cover
Camera Equipment Co., Inc.	630
Camera Mart, Inc.	622, 624, 634, 674
Camera Service Center	2nd Cover
Cineked Engineering Co.	672
ColorTron Industries	432-633
Victor Dancon	665
Eastman Kodak Co.	648-649
Ferlus Film Co.	670
Film Effects of Hollywood	663
Flintline Corporation	667
Florman & Sabb, Inc.	662, 665, 669, 671
Frigidheat Industries	674
Jack Frost	635
W. J. Geeman, Inc.	3rd Cover
Gordon Enterprises	626
Hanson Books	668
Hollywood Film Co.	653
Lab-TV	638
Lowell-Light Photo Engr.	666
Lloyd's Camera Exchp.	664
Magnascope Corp.	639
Ray Mercer & Co.	672
Witchall Camera Corp.	657
Mole-Richardson Company	667
Mole-Richardson	
European Service	637
Movielab	631
National Carbon Co.	637
National Cine Equip. Co.	669
Nelco Service Co.	662
Ostin & Ostriv	682
Pellegrini-Pick	670
Photomart	674
Photo Research Corp.	673
Precision Laboratories	663
Charles Ross, Inc.	645
SO'S Photo-Cine-Optics, Inc.	671, 673
Stevens Engineering Co.	663
Uhr Cine Machine Co.	636
Video Film Laboratories	670
Vitelone Co.	670

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